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Aviation in Canada

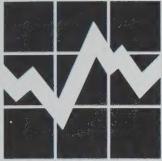


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Canada



Statistics Canada
Transportation Division
Aviation Statistics Centre

112

Aviation in Canada

Historical and Statistical Perspectives on Civil Aviation

Published by authority of the Minister
responsible for Statistics Canada

© Minister of Industry,
Science and Technology, 1993

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Note of Appreciation

Canada owes the success of its statistical system to a long-standing cooperation involving Statistics Canada, the citizens of Canada, its businesses and governments. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

Symbols

The following standard symbols are used in Statistics Canada publications:

- .. figures not available.
- ... figures not appropriate or not applicable.
- nil or zero.
- amount too small to be expressed.
- p preliminary figures.
- r revised figures.
- x confidential to meet secrecy requirements of the Statistics Act.

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Foreword

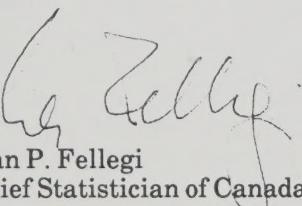
The Dominion Bureau of Statistics was created in 1918 in response to Canada's need for information in a war-time environment. The Canadian aviation industry also began around this time with recently discharged military pilots and a surplus of World War I airplanes.

During the 75 years that followed, Statistics Canada compiled data on most industries in Canada, including the aviation industry. *Aviation in Canada: Historical and Statistical Perspectives on Civil Aviation* is a commemorative issue, written in celebration of the 75th anniversary of Statistics Canada.

The aviation industry has witnessed tremendous and rapid developments during these 75 years. Beginning with a regulated legislative framework, the industry has moved into a deregulated environment. The evolution of technology has also contributed to operational efficiency and passenger safety and comfort. Currently, in an era of increased global competition, the Canadian aviation industry is in the course of further transformation to position itself for the future.

Aviation in Canada: Historical and Statistical Perspectives on Civil Aviation draws together comprehensive information from many sources within Statistics Canada, as well as, outside the Bureau. As such, it provides a convenient resource for both the new and experienced data user. Readers are provided with a brief description of the history of the aviation industry in Canada as background to current events. The detailed tables and graphs are analyzed and explained in the text, in terms of what changes have occurred in the industry, the factors influencing these events, as well as the potential impact on subsequent events. Issued approximately once a decade, the current issue presents a compendium of Canadian aviation.

As part of the 75th anniversary of Statistics Canada, I am proud to present this commemorative review of aviation in Canada.


Ivan P. Fellegi
Chief Statistician of Canada

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CHAPTER 1

History of Statistics Canada's Aviation Data



History of Statistics Canada's Aviation Data

On May 24, 1918, seventy-five years ago, the act respecting the Dominion Bureau of Statistics received Royal Assent;

"the duties of which shall be to collect, abstract, compile and publish statistical information relative to the commercial, industrial, social, economical and general activities and condition of the people, to collaborate with all other departments of the Government in the compilation and publication of statistical records of administration according to the regulations, and to take the Census of the Dominion as hereinafter provided." (1)

The Bureau reported through the Department of Trade and Commerce and had Robert H. Coats as its first Chief Statistician.

Until 1922, the Air Board regulated the aviation industry, mandated by the Air Board Act of June 6, 1919. Responsibility for aviation then fell to the Aviation Division of the Department of National Defence. Control of civil aviation activities remained with the military until 1936, when the government gave the authority for all modes of transportation to a civilian department. This department was the newly created Department of Transport. In that year as well, the Dominion Bureau of Statistics was made responsible for producing the industry's statistics.(2) The first report on civil aviation was published by the Dominion Bureau of Statistics in the following year. The data within this report had been collected under the Statistics Act of 1918 and the Air Regulations of 1920.

The introductory remarks in the 1937 publication gave the flavour of the time:

"During 1936, the principal activity of commercial aircraft operators in Canada was the carriage by air of passengers, freight, and mail to mining fields in the more remote parts of the Dominion. Their work also included forest fire patrols, timber cruising, air photography, flying instruction, advertising and short passenger flights in various parts of the country." (3)

The statistics published in this first edition reported just over 100 thousand passengers carried during the year, most of them on "short passenger flights".¹ The Air Transport Board, in collaboration with the Dominion Bureau of Statistics, undertook the collection of financial and operational statistics in 1944.

A new Transportation and Communications Division was created in 1965 within the Dominion Bureau of Statistics, to collect data on Surface, Marine, Aviation, Pipeline and Communications. This new source of information was used for publication,

¹ By comparison, in 1991, the industry averaged over 100 thousand passengers carried every day.

1968 – The first monthly Service Bulletin by the Aviation Statistics Centre was published.

replacing the Air Transport Board. By 1966, the growing need to centralize the flow and analysis of the aviation industry was recognized, resulting in the creation of the Aviation Statistics Centre as part of

the Transportation and Communications Division. The Aviation Statistics Centre was to respond to the information needs of the Dominion Bureau of Statistics, Transport Canada and the Canadian Transport Commission (predecessor to the National Transportation Agency).

The creation of the Aviation Statistics Centre has reduced the response burden on the airline industry by providing a single focal point for statistical filing for the industry. The users of aviation information are also provided with centralized information. These users include the members of the funding group and other government departments, academics, foreign aeronautical authorities, international aviation groups and the industry itself.

The Dominion Bureau of Statistics became Statistics Canada in 1970. Today, the Aviation Statistics Centre, as part of Statistics Canada, provides information on almost every aspect of Canadian civil aviation with emphasis on aircraft movements, airline operations, productivity and financial health, air fares, passenger origin and destination statistics, airport activity and charter statistics. The data are used by both government and private sector organizations for route planning and development, general economic analysis and airport planning, and a host of other aviation-related matters.

Especially predominant, in terms of users, have been the country's commercial carriers, who, in facing the challenges of the 1990s, have an increasing need for statistics to form their marketing strategies and make their business decisions. These carriers constitute the basic strength of our statistical program by their continued support in responding to our surveys.

While Statistics Canada has amassed an impressive store of data on the aviation industry over the last 75 years, the technology of our collection techniques has also undergone changes and improvements. As a result, some of our surveys have only begun in the 1980s, while others date to the earlier days.

Through this data base, it has been possible to construct the composite picture of Canadian aviation presented in this publication in celebration of Statistics Canada's 75th anniversary.

In this 1993 anniversary edition of *Aviation in Canada*, the emphasis falls principally on the significant changes of the industry in the last four decades. The reader is referred to the two previous editions of this publication (released in 1973 and 1986) for earlier data and history. (4)

The Relevance of Aviation

Since its beginnings, transportation has been important to Canada as a nation building tool. A comparison of the aviation industry to the other modes of transportation (excluding private automobile) highlights the increasing role of aviation in Canada. Of the over 50 million passengers buying transportation services in Canada in 1989, 46% of passengers flew, 33% took a bus, while rail and marine accounted for 11% and 9%, respectively. The aviation industry, in 1991, represented 15% of the transport industry's Gross Domestic Product. (5)

Since the propensity to fly is closely linked to economic performance, Canada's position in a global setting also has an impact on the aviation industry. To situate the importance of Canadian aviation in the world, in 1991, Canada carried the ninth largest number of passengers and ranked in eighth place in terms of the number of passenger-kilometres performed, even though we ranked merely 31st in the world in terms of the size of our population. (6)

Trends Influencing the Data

In the 1980s and 1990s, major developments have contributed to the structure of the Canadian aviation industry. There has been a complete cycle in the domestic charter industry including a period of significant growth, and decline and growth again. In scheduled services, the expansion of the regional carriers in the 1970s and 1980s has been followed by a large number of mergers and acquisitions and their inclusion in the 1990s into the families of the major carriers.

While competition between scheduled and charter carriers had its beginnings in the fare wars of the early 1970s, it was not until 1978 that the domestic charters competed with the national scheduled carriers in long-haul transcontinental markets.

There was also increased competition within the scheduled segment of the industry. By 1979, all capacity constraints on the operations of Canadian Pacific Air Lines (CP Air) had been eliminated. During the late 1970s and early 1980s, the territorial boundaries regulating the operations of the regional carriers were expanded.

The new Freedom to Move policy had begun to make itself felt in 1985, with increased activity in regional carrier services and the widespread use of discount fares. Concentration, through mergers and acquisitions, occurred prior to and during deregulation which was formally introduced in 1988. Deregulation also sharpened the competitive environment as carriers attempted to expand their market share.

Regional carriers were among those becoming more competitive. Previously restricted by the type of aircraft they could operate, with deregulation some regional carriers emerged as strong players in certain high-density, short-haul markets. This was aided by the availability of new equipment (such as de Havilland's Dash 7s and Dash 8s, Avions de transport régional's ATR42 and the British Aerospace Jetstream 31) which were particularly suited to this type of market.



de Havilland Dash 8
de Havilland Canada, Terry Shwetz

Huge technological advances including the development of economically viable long-range aircraft, fly-by-wire technology, computer reservation systems and others, have shown us that, indeed, the sky is not the limit.

One of the most significant developments in the Canadian aviation industry since deregulation has been the creation of a hub and spoke system for scheduled passenger traffic in the domestic market and, to a lesser degree, in the transborder market. To accomplish this, the largest carriers created a network of affiliate carriers. The carriers in the Air Canada family were called connectors while those in the Canadian Airlines family were called partners. Both families upgraded their fleet, replacing piston equipment with turbo-props and in many cases adding jets. Equipped with better aircraft, the families continued to take over routes from their parent carriers. Finally, the industry began competing more and more on a global level. Commercial agreements with foreign carriers became increasingly important to the economic viability of a carrier.

There have also been counteracting influences on the growth and expansion of the industry. One of these was the substantial increase in fuel costs in the 1970s. Where fuel represented 11% of total operating costs for Canadian carriers in 1971, it had risen to over a quarter of total operating costs by 1981, then fell steadily to 15% in 1991. For some carriers, fuel prices, along with concerns for noise reduction, led to the early retirement of fuel inefficient aircraft and a record number of aircraft purchase orders for new equipment. For other carriers, the unwanted associated debt from these purchases (and other reasons) have stimulated their use of leased aircraft which, in turn, promoted growth in the aircraft leasing industry, in the 1980s.

However, the most severe blow to the industry came with the two recessions. Beginning in the first quarter of 1981, Canada witnessed seven consecutive quarterly declines in Gross Domestic Product and again five quarterly declines beginning in the second quarter of 1990. Influencing all areas of aviation, the recessions left the industry facing financial losses, as economic activity declined both within Canada and world-wide.

Three important events are changing the international aviation market. The 1990s have already witnessed a drive towards a single European market. This will affect our trading relationship with these countries, as well as our bilateral agreements. The demise of the Communist regimes has left their former national carriers looking for modernized fleet and new markets in which to fly. Finally, there is the continuation of the immense growth in the Pacific Rim.

While the early 1990s marked a time of industry-wide downturn, they also prefaced a new era in Canadian aviation history. New transportation policies are being shaped in the form of the Open Skies talks with the United States. In addition, transportation will be influenced with changing trade patterns as Canada negotiates our part in the North American Free Trade discussions. These events and others will undoubtedly impact strongly on aviation as well as many other aspects of Canadian transportation.

As the 1990s usher in this new era, it is important, therefore, to situate the industry and give the perspective of the last four decades. *Aviation in Canada: Historical and Statistical Perspectives on Civil Aviation*, a commemoration to Statistics Canada's 75th anniversary, has been designed to do just this.

Bibliography and Further Reading:

- (1) "Canada's Salesman to the World", The Department of Trade and Commerce, 1892-1939, by O. Mary Hill, McGill-Queen's University Press, Montreal and London 1977, page 113.
- (2) "Canadian General Aviation", by V. Setty Pendakur, 1974 Versatile Publishing, pages 9, 11 and 13.
- (3) "Civil Aviation in Canada", 1936, published by authority of the Hon. W.D. Euler, M.P. Minister of Trade and Commerce, Ottawa, 1937.
- (4) "Aviation in Canada, 1971, A Statistical Handbook of Canadian Civil Aviation" published by authority of the Minister of Industry, Trade and Commerce and "Aviation in Canada, Historical and Statistical Perspectives on Civil Aviation", 1986, published under the authority of the Minister of Supply and Services Canada, Catalogue No. 51-501E. Rather than rewrite the historic portions of this book, substantial portions from the preceding publications were used.
- (5) "Gross Domestic Product by Industry", Statistics Canada, Catalogue No. 15-001.
- (6) "ICAO Journal", July 1992, Table 4, page 19.

CHAPTER 2

Genealogy of the Aviation Industry



Genealogy of the Aviation Industry

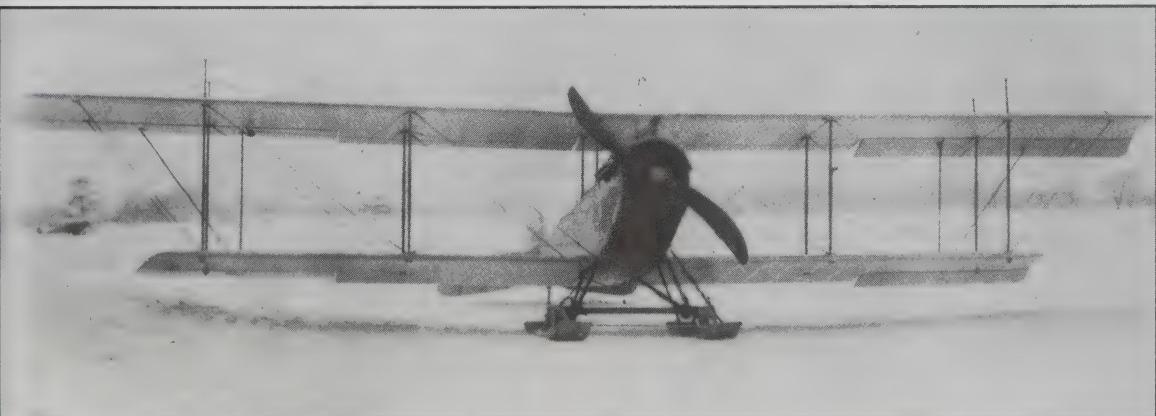
Commercial aviation in Canada had its beginnings in 1918 at the end of World War I. In many respects, it was an industry that was initiated by the first world war, but defined by the needs of the country. With thousands of young pilots and technicians returning from Europe, flying would soon become as important in peace as it had been in war. The feverish production of the war years resulted in an abundance of aircraft on the market. Prices were low and government restrictions on private flying were virtually non-existent. Many of these enthusiasts formed small partnerships, bought one or two 'Jennies' and became gypsy flyers or barnstormers.

May 23, 1924 – The first Canadian scheduled air service was operated by Laurentide Air Service Ltd. between Angliers, Lake Fortune and Rouyn, Québec. The first scheduled air passenger in Canada was mining engineer, W.J. Hacker. (1)

The physical conditions of Canada, with a large area and a scattered population, were particularly suited to aviation. Additionally, aviation was required in those Northern and remote areas where no other means of transportation existed.

These conditions proved a powerful incentive for early aviation entrepreneurs and a new league of bush pilots emerged.

The need for exploration, photography, and forest fire patrol created the first civil use of aircraft in Canada. Commercial aviation was soon to follow. One of the earliest companies formed, the Dominion Aerial Explorations Limited, was part of the modest beginnings of the modern day Pacific Western Airlines (PWA) (see Figure 2.1).



Curtiss JN-4 'Jenny' or 'Canuck'
National Aviation Museum

But despite Canada's enviable record in bush flying operations, there were no established airways. It was easier to fly to major cities in the United States than to travel in Canada. To further complicate matters, the Americans were lobbying Parliament for the right to set up their own transcontinental route in Canada. At the same time, the British Commonwealth was pressing Canada to join it in an all-British round-the-world air transportation system.

Responsibility for resolving the lack of air transportation was given to the newly-created Department of Transport. As part of the solution, the Canadian government decided to establish a national, non-profit airline of its own. An agreement was reached between the federal government and Canadian National Railways to create Trans-Canada Air Lines, as a wholly-owned subsidiary of the railway in 1937 (see Figure 2.1). This government-financed airline operated an air service across Canada as part of the route from Europe to the Far East. It was renamed Air Canada in 1964 and was privatized in 1988.

The number of Canadian commercial carriers operating in Canada² continued to grow annually, until just before the recession (see Table 2.1). Beginning in 1980, the rate of new carriers declined. The seven largest airlines in Canada consisted of two major scheduled airlines, Air Canada and C.P. Air, the largest charter airline, Wardair, and four regional airlines, Eastern Provincial Airways Limited, Nordair Ltd., Pacific Western Airlines Ltd., and Québecair. Three of these airlines, Air Canada, Pacific Western Airlines and Québecair, were government owned. At this time, overlapping routes were highly regulated and competition was carefully controlled by government.

During the mid-1980s, the Canadian aviation industry began an unprecedented structural change, aided by impending deregulation, with a government receptive to mergers and acquisitions and emulating similar moves in the United States. The number of carriers began to increase again in 1984, to reach its peak of 955 carriers in 1986, a year after the Freedom to Move policy was introduced. This was the beginning of the evolution towards two mega carriers and a network of associated feeder airlines in the industry. In some cases, the major carriers developed a marketing agreement with these carriers, in other cases they established equity in the carriers which had previously operated independently and in yet other cases, new carriers were formed, to complete their networks.

² The number of unique carrier codes was used to determine the number of commercial carriers instead of using the number of carrier licenses issued.

Table 2.1
Number of Canadian Commercial Carriers

Year	Total Carriers	New Carriers	Carriers No Longer Operating
1988	912	..	157
1989	856	101	85
1990	851	80	28
1991	886	63	60
1992	895	69	..

Note: Based on unique carrier codes.

Source: Statistics Canada: Catalogue No. 51-206.

Marketing agreements between carriers, both domestic and international, were also common and had many benefits. For example, they could allow both carriers to reduce some of their fixed costs if both carriers agreed to honour each other's tickets or to offer combined fares. This situation would result in the need for only one ticket office and check-in area at an airport. Other agreements involved blocked space on another's aircraft. This type of agreement may allow passengers to transfer from one carrier to another with ease and may include coordinated schedules between the two carriers. In 1991, for example, a passenger, having purchased a Canadian Airlines ticket to Australia, may have been unaware that the aircraft on the Hawaii-Sydney segment of the trip belonged to Qantas and not to the carrier whose ticket they purchased. Marketing agreements may also allow passengers to benefit from each other's marketing schemes, such as frequent flyer programs. In general, marketing agreements are less permanent than partial ownership, in that either partner in the agreement can withdraw very quickly, which may be more difficult in an equity situation.

The alternative to acquisition was to enter another airline's routes and fight for domination. Market share could only be gained by attracting traffic through service innovations, increased frequency and low fares which were generally matched by the incumbent. This could be lengthy and costly to both the incumbent and the entrant and carried no guarantee of success. Acquisition or the creation of a new carrier, even with its certain increase in debt load, was generally considered to be more economical. The combined airlines could then schedule bigger aircraft to carry all of the passengers on their duplicate routes. This could reduce the number of flights and the costs.

Canadian Pacific Air Lines (CP Air) acquired Eastern Provincial Airways and its subsidiary, Air Maritime, for example in 1984.³ A year later, it effectively owned Nordair with Québecair holding a minority interest. CP Air then formed Nordair Metro to act as a feeder for itself and Nordair, and to compete with Québecair in Quebec. By April 1986, operating under its old name, Canadian Pacific, it transferred its Air Maritime routes to Air Atlantic, under a new commuter relationship.

A large surprise to the industry came in December 1986 with a David and Goliath acquisition. The much smaller Pacific Western Airlines Corporation bought all assets of Canadian Pacific Air Lines.

By July 1987, Nordair Metro purchased Québecair. This gave Canadian Pacific, through its holdings in Nordair, friendly control over Québecair and allowed Canadian Pacific, a full takeover of Nordair. Inter-Canadien was then formed from this merger so that the public would deal with a single company. In fact, however, Québecair remained as a holding company for the jet aircraft of the Inter-Canadien fleet while Les Lignes Aériennes Inter-Québec operated their turbo-props.

In the West, in February 1987, Norcanair became a feeder for Canadian Pacific when Canadian Pacific bought a minority holding of Norcanair. On April 26, 1987, Canadian Pacific Air Lines and Pacific Western Airlines integrated into Canadian Airlines International Limited (CAIL) and Canadian Pacific Air Lines, Pacific Western Airlines, Nordair and Eastern Provincial Airways no longer existed.

The largest increase in the number of new carriers occurred in 1988, when deregulation was formally introduced. As well, the rapid pace of mergers continued into 1989. Frontier Air was purchased by Ontario Express. Doing business under the name Canadian Frontier, this new carrier would start operating as a Canadian Partner in 1990. In 1989 as well, Inter-Canadien left the PWA family creating the

³ The formation of Canadian Airlines was dynamic. For this reason the history of Canadian Airlines was described.

Figure 2.1 Genealogy of the Major Canadian Air Carriers to 1992

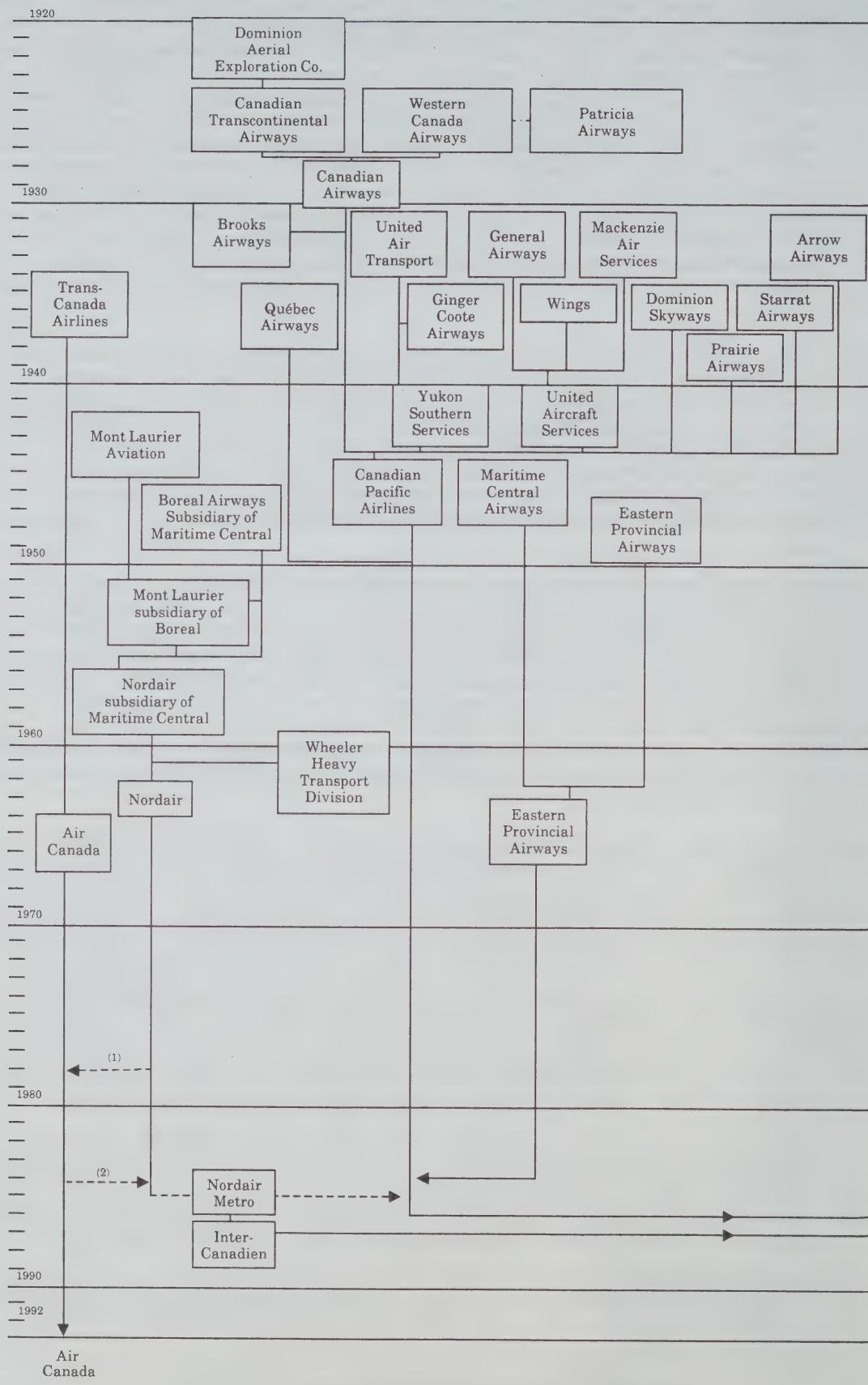
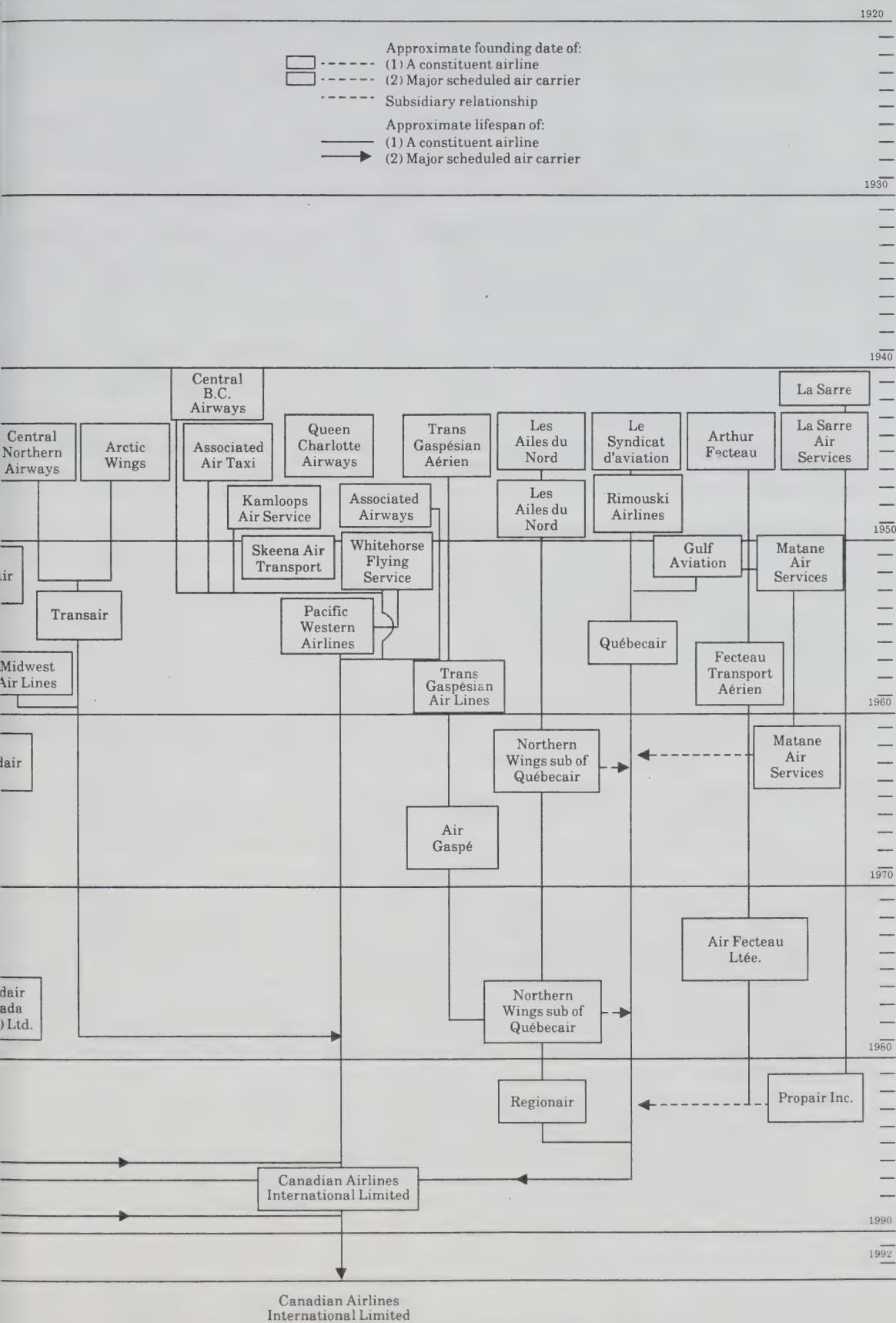


Figure 2.1 Genealogy of the Major Canadian Air Carriers to 1992 – Concluded



independent carrier, Intair. Intair's move from affiliation was a lesson to both major carriers who then began buying control of the carriers in their network in order to prevent future defections from the family. Yet again, in 1989, PWA Corp. shocked the aviation industry with another announcement. This time, they announced their purchase of Wardair including its brand new fleet of Airbus aircraft.

Air Alma joined the Canadian family filling the feeder space in Quebec left by Inter-Canadien's departure in 1990. Canadian Airlines did not buy equity in this airline. Consequently, Air Alma, which was experiencing financial problems, operated under the name Air Québec Metro for just two quarters before it dropped the affiliation.

May 10, 1926. — The first Canadian-built commercial aircraft, a Canadian Vickers Vedette, G-CAFF, for Fairchild Aerial Surveys Ltd., was launched at Montréal.
(1)

turbo-prop operations and re-established Inter-Canadien as a Quebec partner. In this year, Ontario Express bought Air Toronto which was in receivership. Air Toronto was previously an Air Canada connector, however, with this purchase it then joined the Canadian Airlines family. In 1991, there was a total of 886 licensed Canadian commercial carriers operating in Canada.

By 1991, PWA Corp. established Canadian Regional Airlines Ltd. to consolidate the management of its partners and to acquire the remaining shares of Time Air and Ontario Express. This new company bought a controlling interest in Intair's

The Effect of the Family Network

As a result of these affiliations, the major carriers and their networks had the geography of Canada covered north, south, east and west. The major carriers continued to service the dense long-haul routes, often considered a ticket to prosperity by the industry, and passed their short-haul routes to their affiliates. Since the major carriers were committed to flying their announced routes, any additional traffic supplied by their affiliates directly affected their profit lines. Carriers in the family, on the other hand, benefitted from access to their parent's reservation systems, passenger handling facilities, marketing programs and the 'goodwill' of their name.

The formation of this hub and spoke feeder system had several other intuitively obvious effects on the industry. It increased airline efficiency and aircraft use, combining traffic from smaller communities to support increased frequencies at hub airports.

The coordination between carriers within this new route system resulted in a mixed use of jet services with turbo-prop services. A passenger might begin a journey in a small community, fly by turbo-prop to a hub airport, transfer to a major carrier's jet service to get to a second hub and then fly a second spoke to a second small community by turbo-prop. However, with the alliances in place, the frequency of service was likely to be greater, the schedules of the major carriers and their affiliates were likely to be coordinated and if there was route competition, the ticket price was likely to be discounted.

In 1992, with the size of the domestic market and of the major carriers, it would have been difficult for a smaller carrier to expand to the size of the major carriers and compete successfully with them. There were few remaining independent carriers available to become affiliated to the new competitor. Since the major carriers bought equity in the current feeder carriers, defections to a new entrant would also have been

difficult. Without this hub and spoke network, this new carrier would have found it hard to compete in the long-haul transcontinental market. As well, since international carriers had to respect the 25% Canadian ownership rule, they would also have found it difficult to compete against the majors within Canada. These reasons made the current domination by major carriers and their affiliates in the domestic market likely to continue.

The lists of carriers in the affiliates of Air Canada and Canadian Airlines changed continuously from 1988 to 1992 (see Figure 2.2). Increasingly though, as the governmental control over routes lessened with deregulation, the emphasis for these alliances shifted from accumulating new routes to constructing a feeder service to their hub and spoke networks. Whereas previously, the government administered capacity, after deregulation it was administered through competitive forces in the market place.

Major Carriers and Their Affiliates in the Scheduled Market

The effects of these structural changes are evident when the load factors⁴ (see Table 2.2) and the market shares (see Table 2.3) of Air Canada, Canadian Airlines International Limited and their affiliates, were examined for the years 1988 to 1992.

Air travel was growing between 1987 and 1988. High load factors were reported by the two major airlines at this time. However, although Air Canada and Canadian Airlines International Ltd. both reported absolute increases in passengers, passenger-kilometres and hours flown, they experienced decreases in market share. This was expected since they passed their short-haul routes to their affiliates. Both carriers also posted increases in passenger revenue over 1987, but they both experienced decreased yields.⁵ The lower yields reflected the highly competitive use of discount fares to compete with Wardair. Overall, their growth was not as great as that of the rest of the industry, partly due to the increased competition in the domestic scheduled and transborder markets from Wardair, with an expanded fleet of 12 new Airbus A310s. As a group, the affiliates expanded in all aspects of their operations, increasing their available seat capacity to 3.5 billion seat-kilometres. Customer loyalty, in this year, was maintained through the use of frequent flyer plans by the major carriers.

Load factors were affected by changes in available seat-kilometres more than by the number of passengers in 1989. Increased seating capacity within Air Canada and the connectors resulted in decreased load factors while decreased available seat-kilometres in Canadian Airlines allowed it to maintain its load factor of the previous year. The planned strong growth by the two groups of affiliates also contributed to the decline in market shares of the major carriers. The affiliates' shares expanded as they continued upgrading their fleet, replacing piston equipment with turbo-props and adding jets to fill the demand created from servicing their parent's former routes. These new feeder routes increased the frequency of the family carriers' flights to hub airports. Finally, the industry itself grew as the demand for air travel improved. This peak year for the industry was reflected in increased financial yields by all groups.

⁴ Load factor is a percentage figure indicating how full an aircraft is.

⁵ Yield is defined as passenger revenue per passenger-kilometre.

Figure 2.2

Air Canada, Canadian Airlines International and Their Affiliate Networks, 1988-1992

	Annual 1988	Annual 1989	Quarter I/1990	Quarter II/1990	Quarter III/1990	Quarter IV/1990	Quarters I & II/1991	Quarter III/1991	Quarter IV/1991	Annual 1992
Air Canada	Air Canada	Air Canada	Air Canada	Air Canada	Air Canada	Air Canada	Air Canada	Air Canada	Air Canada	Air Canada
Air Alliance	Air Alliance	Air Alliance	Air Alliance	Air Alliance	Air Alliance	Air Alliance	Air Alliance	Air Alliance	Air Alliance	Air Alliance
AirBC	AirBC	AirBC	AirBC	AirBC	AirBC	AirBC	AirBC	AirBC	AirBC	AirBC
Air Nova	Air Nova	Air Nova	Air Nova	Air Nova	Air Nova	Air Nova	Air Nova	Air Nova	Air Nova	Air Nova
Air Ontario	Air Ontario	Air Ontario	Air Ontario	Air Ontario	Air Ontario	Air Ontario	Air Ontario	Air Ontario	Air Ontario	Air Ontario
Air Toronto	Air Toronto	Air Toronto	Air Toronto	Air Toronto	Air Toronto	Air Toronto	Air Toronto	Air Toronto ¹	Air Toronto ¹	Air Toronto ¹
NorthWest Territorial	NorthWest Territorial	NorthWest Territorial	NorthWest Territorial	NorthWest Territorial	NorthWest Territorial	NorthWest Territorial	NorthWest Territorial	NorthWest Territorial	NorthWest Territorial	NorthWest Territorial
Canadian Airlines	Canadian Airlines	Canadian Airlines	Canadian Airlines	Canadian Airlines	Canadian Airlines	Canadian Airlines	Canadian Airlines	Canadian Airlines	Canadian Airlines	Canadian Airlines
Air Atlantic	Air Atlantic	Air Atlantic	Air Atlantic	Air Atlantic	Air Atlantic	Air Atlantic	Air Atlantic	Air Atlantic	Air Atlantic	Air Atlantic
Calm Air	Calm Air	Calm Air	Calm Air	Calm Air	Calm Air	Calm Air	Calm Air	Calm Air	Calm Air	Calm Air
Ontario Express	Ontario Express	Ontario Express	Ontario Express	Ontario Express	Ontario Express	Ontario Express	Ontario Express	Ontario Express	Ontario Express	Ontario Express
Time Air	Time Air	Time Air	Time Air	Time Air	Time Air	Time Air	Time Air	Time Air	Time Air	Time Air
Inter-Canadien ²	Inter-Canadien				Canadian Frontier	Inter-Canadien				
					Air Quebec Metro	Air Quebec Metro				Air Toronto

¹ Air Toronto, the scheduled operations of Soundair Corp. operated as an Air Canada Connector until Quarter III/91. During Quarter IV/91 Air Toronto became a Canadian Partner.

² Lignes Aériennes Inter-Québec (turbo-prop) & Québecair (jets) formed Inter-Canadian. Air Toronto left the Canadian Partners in Quarter IV/89 to become Inair, an independent. They rejoined the Canadian Partners during Quarter III/91.

Table 2.2

Load Factors for the Major Scheduled Carriers, 1970-1992

Year	Available Seat kilometres ('000,000)	Revenue Passenger-kilometres ('000,000)	Passenger Load Factor %
1970	26 044	14 575	56.0
1971	25 958	14 230	54.8
1972	26 572	17 154	64.6
1973	30 613	20 116	65.7
1974	36 226	22 836	63.0
1975	39 594	23 126	58.4
1976	39 607	24 127	60.9
1977	39 697	25 147	63.3
1978	42 066	26 985	64.1
1979	47 120	31 574	67.0
1980	48 489	33 081	68.2
1981	54 045	35 177	65.1
1982	50 981	31 944	62.7
1983	47 143	31 133	66.0
1984	50 048	33 911	67.8
1985	54 680	35 619	65.1
1986	58 297	38 862	66.7
1987	58 157	40 205	69.1
1988	66 195	45 967	69.4
1989	68 415	46 684	68.2
1990	67 011	46 128	68.8
1991	62 205	40 145	64.5
1992	65 248	42 463	65.1

Sources: Statistics Canada: Catalogue Nos. 51-002 and 51-206.



Airbus A320
Courtesy of Canadian Airlines International Ltd

Table 2.3

Market Shares for Air Canada, Canadian Airlines and Their Affiliate Networks, 1988-1992

Year		1988	1989	1990	1991	1992 ^p
Air Canada						
Passengers	'000	13,680	13,693	12,971	10,879	10,855
Market Share	%	45.33	44.55	42.74	41.67	41.10
Passenger-kilometres	'000	22 810 591	23 910 081	24 504 026	20 300 363	21 454 150
Market Share	%	46.92	48.11	48.89	47.68	47.56
Available Seat-kilometres	'000	32 298 044	34 760 746	34 821 303	30 065 131	32 579 750
Load Factor	%	70.63	68.78	70.37	67.52	65.85
Hours	No.	341,895	361,138	354,395	318,878	334,844
Passenger-Revenue	\$'000	2,349,114	2,550,570	2,670,875	2,280,641	2,244,892
Market Share	%	47.45	47.14	46.29	43.02	42.14
Yield	\$	0.103	0.107	0.109	0.112	0.105
Air Canada Connectors						
Passengers	'000	2,282	3,389	4,065	3,698	3,843
Market Share	%	7.56	11.03	13.39	14.17	14.55
Passenger-kilometres	'000	819 128	1 250 784	1 687 873	1 620 007	1 685 089
Market Share	%	1.69	2.52	3.37	3.81	3.74
Available Seat-kilometres	'000	1 614 018	2 812 815	3 429 774	3 590 484	3 632 488
Load Factor	%	50.75	44.47	49.21	45.12	46.39
Hours	No.	132,455	167,839	207,564	212,383	230,714
Passenger-Revenue	\$'000	201,454	330,175	444,052	452,912	483,986
Market Share	%	4.07	6.10	7.70	8.54	9.08
Yield	\$	0.246	0.264	0.263	0.280	0.287
Canadian Airlines						
Passengers	'000	8,814	7,675	8,550	7,257	7,355
Market Share	%	29.21	24.97	28.17	27.80	27.85
Passenger-kilometres	'000	17 924 523	17 521 416	21 623 624	18 582 117	19 817 081
Market Share	%	36.87	35.26	43.15	43.65	43.93
Available Seat-kilometres	'000	25 936 602	25 353 673	32 190 163	29 775 893	30 063 243
Load Factor	%	69.11	69.11	67.17	62.41	65.92
Hours	No.	282,454	254,813	299,637	269,359	266,513
Passenger-Revenue	\$'000	1,712,036	1,674,266	2,115,599	2,037,852	2,061,003
Market Share	%	34.58	30.95	36.66	38.44	38.69
Yield	\$	0.096	0.096	0.098	0.110	0.104
Canadian Partners						
Passengers	'000	2,203	3,087	2,590	2,939	3,024
Market Share	%	7.30	10.04	8.53	11.26	11.45
Passenger-kilometres	'000	839 116	1 151 930	1 023 949	1 109 956	1 372 900
Market Share	%	1.73	2.32	2.04	2.61	3.04
Available Seat-kilometres	'000	1 863 640	2 961 461	2 352 021	2 796 879	3 028 596
Load Factor	%	43.85	42.87	44.07	43.98	45.33
Hours	No.	126,557	212,667	173,976	184,907	203,068
Passenger-Revenue	\$'000	200,045	314,594	272,699	343,341	352,498
Market Share	%	4.04	5.81	4.73	6.48	6.62
Yield	\$	0.238	0.273	0.266	0.309	0.257

Sources: Statistics Canada: Catalogue No. 51-206 and Internal Reports.

Aviation activity began to slow down by 1990. Air Canada, however, in tailoring its fleet capacity to demand and concentrating on long-haul flights, came close to recovering its 1988 load factor level. With the acquisition of Wardair, Canadian Airlines faced the same over-capacity problem that Air Canada had in the previous year. The greater increase in the affiliates' passenger-kilometres than in the number of passengers they transported suggested they were flying longer distances. The longer distances, in turn, favourably influenced their load factors in 1990. In this year, Air Canada gained market share, only in terms of passenger-kilometres. Canadian Airlines International Ltd., on the other hand, reported a market share reduction in the number of passengers and passenger-kilometres. Air Canada's connectors posted increases in these categories while Canadian's partners showed decreases. Finally, the increased yields in all groups in this year seemed as yet exempt from recessionary pressures.

Many changes affected the affiliations of the major carriers in 1991. In spite of seat capacity reductions, load factors declined for the major airlines and their affiliates. During the second quarter of 1991, Canadian Airlines International Ltd. showed gains in passenger-kilometre market share of 1.1 percentage points while Air Canada's passenger-kilometre share dropped 1.0 percentage point from the second quarter of 1990.



Beech 99
Courtesy Canadian Airlines International Ltd.

With PWA's purchase of Intair's turbo-prosps, a new carrier, Inter-Canadien, began as a partner, offering services in Quebec again, for the first time in nine months. PWA also purchased the routes, licences and other assets of Air Toronto (a division of Soundair Corp.), switching it from being an Air Canada connector, to a Canadian Airlines partner in July 1991. These third quarter changes resulted in the Air Canada connectors showing decreases in all categories including a 0.7 percentage point decline in passenger market share while the Canadian Airline partners reported increases in these categories with a 3.3 percentage point increase in passenger market share during the third quarter of 1991.

The partners of Canadian Airlines gained in market share over the connectors of Air Canada into the fourth quarter of 1991. The Air Canada connectors still carried a higher share of enplaned passengers although their lead in passenger-kilometres narrowed to less than 0.9 percentage point. Meanwhile, the Canadian Airline partners showed huge increases in all categories relative to the fourth quarter of 1990, largely as the result of the two new Canadian partner carriers. Remarkably, all groups showed increased yields. In the height of a recession, this indicated just how sophisticated the industry's computerized yield management systems had become.

Structural Changes Within the Charter Industry

Any discussion of the change in the make-up of the air carrier industry would be incomplete without specific mention of the changes in the charter industry. Before 1983, the operations of the two strictly international charter carriers, Wardair and Worldways, were supplemented by the services of the major transcontinental carriers, Air Canada and CP Air, and by the regional carriers, Nordair, Pacific Western, Québecair and Eastern Provincial Airways. With deregulation easing the rules to start a new airline, this list was soon to include Nationair, Minerve Canada, Canada 3000 Airlines, Air Transat, Odyssey International, Points of Call Airlines, and Vacationair. It was further extended with the addition of Holidair and Crownair in 1989.

But the unprecedented increase in the number of new charter companies was accompanied by an equally unprecedented number of airline failures. Holidair Airways and Minerve Canada suspended operations in 1989. In this same year, debt-ridden Wardair was bought by Canadian Airlines International. Fallout in the charter industry continued into 1990 with Points of Call, Vacationair, Crownair, Odyssey International and Worldways Canada no longer operating. From 1989 to a year later, nine independent charter operators were out of business leaving only three of the original 12 major charter airlines operating. The charter market was small to begin with, and the profit margins were simply not large enough to support the intense competition for passengers.⁶

⁶ *Financial Post Oct. 8, 1990 paraphrased W.A. Jordan*



Avro C102 Jetliner,
The first Canadian jet powered commercial aircraft,
National Aviation Museum

Intair would join the air carriers that no longer operated, after merger talks with Nationair broke down in 1991. About this time, the government required the protection of advance payments for international charter services to cover tour operators and help stranded travellers return home when the carrier they were flying with, went out of business.⁷ This left Air Transat, Canada 3000 Airlines and Nationair, as dedicated charter carriers in 1991, along with the scheduled carriers, covering the globe while concentrating in particular markets.

Although the charter markets are constantly changing and are very competitive, in 1991, Nationair mainly serviced the southern region, in particular Mexico and the Dominican Republic, and Europe. Air Transat concentrated on France, and the Dominican Republic and Mexico, while Canada 3000 was strong in both the southern region, particularly Mexico, and Florida in the United States. Scheduled carriers also had some charter operations. For example, Air Canada and Canadian Airlines serviced the United States, with Florida and Nevada being their most popular destinations. Similarly, charter carriers competed with domestic scheduled operations, with Canada 3000 ruling the domestic charter market in 1991.

In Review....

Generally, after 75 years, one might expect fewer structural changes within the aviation industry. As evidenced by the rapidity and the magnitude of the changes in aviation in Canada, in many ways the industry is still in its infancy. With the increased competition, carriers in the 1990s not only have to anticipate the effects of their efforts on their passengers but also on the competition.

Aviation has become a major industry in Canada. The significant consolidation within the industry since deregulation has contributed to intensified competition. In 1991, the two largest airlines carried close to two-thirds of scheduled passengers and earned over two-thirds of the total scheduled revenues. The following two chapters present a composite picture of strategies and effects of commercial aviation in Canada from an operational and financial point of view. The statistics presented in these chapters relate largely to the availability of the data. In some cases, the data were collected as early as the 1920s; in other instances the time series began later. In all cases, the analysis emphasizes the most recent developments in a rapidly changing industry.

⁷ *Travelweek Bulletin, October 17, 1991.*

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- (6) *Travelweek Bulletin, October 17, 1991.*

CHAPTER 3

Aviation Takes Off



Aviation Takes Off

The Canada of the 1920s was rough and ready, with vast stretches of land, virtually unexplored, and with areas in the North rich in mineral wealth. It was also a country largely lacking in roads, railways, or communication systems. It was, in other words, a country with great scope for an air transport industry.



The Canadair North Star was the first pressurized four-engined aircraft to go into service with Air Canada.

The statistics on this early era of aviation show how fast air transport caught on. From 1921 to 1931, mail and cargo shipments alone increased more than 30 fold, going from about 36 thousand kilograms in 1921 to over one million kilograms in 1931. In addition to military and frontier work, for many Canadians, the airplane was rapidly becoming a viable and dependable means of transport, reducing travel time from days to a matter of hours. Passenger travel in this period took off, climbing from nine thousand passengers in 1921 to 100 thousand in 1931 (see Table 3.1).

By the 1940s and 1950s, Canada's air transport industry outgrew many of the hardships Canada's early aviators experienced, and began to assume a major role in the country's transportation system. Many passengers who previously used trains and ships began using aviation. It was, by then, an industry with a good financial record and a strong upward growth pattern.

The eagerness with which Canadians took to the air since those early days of flying has never diminished. More and more, Canadians choose to travel by airplane and the distances they fly are ever-increasing.

Table 3.1

Summary of Canadian Commercial Aviation, Operating Statistics, 1921-1992

Year	Passengers ('000)	Passenger-kilometres ('000 000)	Cargo Kilograms ('000)	Mail Kilograms ('000)	Hours Flown ('000)
1921	9	-	36	-	4
1922	4	-	5	-	3
1923	2	-	5	-	3
1924	4	-	35	-	2
1925	4	-	17	-	1
1926	5	-	29	2	2
1927	17	-	172	7	4
1928	55	-	744	144	29
1929	96	-	1 129	262	52
1930	125	-	798	215	93
1931	100	7	1 076	213	74
1932	77	5	1 420	187	144
1933	58	6	1 908	244	53
1934	72	10	6 550	284	76
1935	140	13	11 993	511	89
1936	110	16	10 409	502	76
1937	126	23	11 030	658	98
1938	105	33	8 888	592	83
1939	109	38	8 782	807	86
1940	125	64	6 476	1 163	96
1941	153	85	7 418	1 368	97
1942	183	109	5 517	1 973	96
1943	239	153	5 660	2 868	107
1944	299	167	5 059	2 592	111
1945	364	220	6 011	2 357	143
1946	632	326	10 841	2 230	193
1947	737	392	14 672	2 680	275
1948	919	529	15 693	4 034	292
1949	1,040	645	15 202	5 507	272
1950	1,277	776	19 310	5 948	300
1951	1,547	929	24 332	6 323	846
1952	1,952	1 283	59 990	6 950	481
1953	2,273	1 513	78 430	7 750	514
1954	2,382	1 724	49 281	10 052	483
1955	2,763	1 983	105 163	11 008	623
1956	3,370	2 479	134 999	11 599	757
1957	3,752	2 909	110 870	13 274	767
1958	4,037	3 415	80 810	14 237	728
1959	4,703	3 958	84 414	14 921	796
1960	4,830	4 507	95 401	15 709	879
1961	5,102	5 323	91 955	16 218	865
1962	5,425	5 862	93 895	17 432	843
1963	5,599	6 162	100 325	19 002	867
1964	6,031	7 435	110 886	21 230	948
1965	6,832	8 729	128 618	22 879	1,128
1966	7,727	10 044	170 909	22 235	1,375
1967	9,213	12 287	149 618	25 150	1,569
1968	9,577	13 808	185 407	26 848	1,647
1969	10,593	15 261	232 042	28 625	1,670
1970	12,031	18 605	258 420	30 068	1,669
1971	12,889	18 527	280 887	35 566	1,813
1972	14,422	21 739	307 333	38 093	1,923
1973	17,493	25 897	340 226	43 315	2,145
1974	19,601	29 166	344 429	48 096	2,301
1975	20,493	31 539	362 711	45 032	2,466
1976	20,994	32 797	341 021	55 892	2,467
1977	22,318	35 553	390 502	58 143	2,578
1978	23,649	38 249	410 204	56 756	2,664
1979	27,123	44 901	447 817	57 576	2,928
1980	28,554	46 996	399 418	59 978	3,091
1981	27,189	46 086	374 893	60 525	2,515
1982	24,447	44 179	344 703	65 431	2,454
1983	23,789	43 370	357 152	68 768	2,235
1984	27,701	46 444	464 088	80 604	2,290
1985	29,056	49 968	328 013	81 457	2,273
1986	30,818	53 084	334 750	79 464	2,365
1987	31,863	55 364	334 230	69 011	2,555
1988	36,009	62 292	631 242	..	2,052
1989	37,175	65 789	658 403	..	2,238
1990	36,813	66 778	654 484	..	2,267
1991	31,808	57 888	640 497	..	2,098
1992P	32,634	62 527	..	..	..

Note: Cargo and Mail data do not include Charter Services from 1985 to 1987.

Hours Flown data do not include Specialty Operations from 1988 to 1991.

Sources: Historical Statistics of Canada, MacMillan, 1965, and Statistics Canada: Catalogue Nos. 51-002, 51-202, 51-206 and Internal Reports.

51-002

51-004

51-005

51-206

[51-207]

Since 1950, the overall trend in the number of passengers has been one of upward growth. Canadian carriers took on just over one million passengers in that year, a figure which increased to well over 28 million by 1980, and to nearly 32 million by 1991. Notable growth periods span the 1960s, when the number of 5 million to just over 10 million, and the going from approximately 12 million to 27

ionary periods. The number of passengers it witnessed a 34% recovery between 1984 deregulation stimulated passenger traffic short, however, by the second economic

industry relates to the enormous changes in aircraft was introduced to Canada in 1954 Viscounts to fly domestic and transborder aircraft, such as the early DC-8 and the their larger seating capacity and state-of-passengers in comfort, and covered very Technology was further improved in the

1970s with the introduction of wide body aircraft and high efficiency engines, such as the Boeing 747, DC-10, Lockheed L1011 and the Airbus 300. These aircraft changed aviation into the reliable, economical, mass transportation method it is today.

A second contributor to the industry's expansion in the 1980s was the consumers' response to intense marketing efforts from carriers anxious to win larger market shares. The airlines offered an increasing variety of services at attractive prices. Up to this point in time, since there was little differentiation between flying on one airline rather than on another airline, an airplane seat was a commodity to the traveller which could be easily substituted. In an attempt to ensure brand loyalty, a variety of frequent flyer programs were introduced. Since then, some travellers have flown out of their way to gain the benefits from the additional mileage.



The Vickers Viscount was the world's first commercial turbine-propelled airplane

Another important aspect in examining the industry's growth is the number of passenger-kilometres flown. This summation of the number of kilometres flown by each passenger increased steadily since the mid-1930s. From 1940 to 1955, the average per passenger distance doubled approximately every four years, then doubled approximately every six years until the mid-1960s. From 1966 onward, passenger-kilometre distance doubled every seven years, until showing slower growth and some declines, beginning in the early 1980s (see Table 3.1). Beginning in the mid-1980s, a small amount of the increase resulted from passengers having to make more connecting flights through a hub airport to reach their final destination, although most of the increase occurred as a result of improved technology and the overall growth in the industry.

Canadian air carriers recorded 776 million passenger-kilometres in their scheduled and charter operations in 1950. This increased to just under 47 billion passenger-kilometres by 1980, to peak at just under 67 billion passenger-kilometres in 1990, before declining to about 58 billion passenger-kilometres in 1991 (see Table 3.1). Whereas in the early years, flying from one city to another was considered a major excursion, by the 1990s, flying across Canada or across the globe was within the realm of possibility for many Canadians. Accordingly, the average passenger trip length increased 18%, from 1 546 kilometres in 1970 to 1 820 kilometres in 1991.

Also indicative of industry growth is the number of tonne-kilometres⁸ flown. Total tonne-kilometres flown increased from 223 million to over five billion from 1955 to 1980, and again to over seven billion in 1991 (see Table 3.2).

The large increase in activity over the past three decades was to be expected in any prospering industry and the aviation industry was no exception. The industry was in a growth cycle. More people were flying as the travel time saved by flying made it more of a necessity than a luxury. An excellent safety record within the industry also contributed to the industry's expansion. As well as the increased interest in flying, technological changes made it possible to fly further and more economically. Regulation and competition, although each had a unique influence on the industry, have both kept airline tickets affordable. With these changes, aviation evolved into a reasonably priced, very reliable means of transportation.

From 1955 to the early 1980s, the air transport industry showed a dramatic 396% increase in the number of aircraft hours flown, reaching a summit of over three million hours in 1980 (see Table 3.2). The general turbulence in the aviation industry, changes in fuel costs, and the move to larger aircraft were reflected in the number of hours flown which varied throughout the 1980s. Nineteen eighty seven was the first year in which the total number of hours flown, which included specialty hours, surpassed the pre-recession 1981 total.⁹ The number of hours flown by scheduled and charter operations continued to increase fairly regularly until the second recession, resulting in a total of over two million hours flown in 1991. Of this total, the helicopter industry accounted for 15%.

Helicopters

While most people think of more conventional aircraft when they think of flying, helicopters also played a highly visible and important role in air transport. Helicopter activity was tied to the resource sector of the economy.

⁸ A tonne-kilometre measures the transportation of one tonne of either passengers or goods over one kilometre.

⁹ This, however, was the last year in which statistics for specialty operations were filed with the Aviation Statistics Centre.

Table 3.2

Tonne-kilometres Flown for Each Hour of Aircraft Flying Time, 1955-1991

Year	Scheduled and Charter Hours Flown	Total Aircraft Hours Flown	Total Tonne- kilometres Flown	Average Tonne- kilometres per Air- craft Hour Flown	Operating Revenue per Tonne- kilometre Flown
	('000)	('000)	('000 000)		\$
1955	516	623	223	358.5	0.68
1956	631	757	275	362.7	0.66
1957	613	767	319	416.0	0.60
1958	557	728	369	507.1	0.55
1959	609	796	427	536.9	0.52
1960	672	879	488	555.3	0.50
1961	626	865	568	656.8	0.46
1962	619	843	630	747.1	0.46
1963	631	867	672	775.6	0.47
1964	677	948	840	886.1	0.41
1965	766	1,128	983	871.5	0.41
1966	859	1,375	1 139	828.7	0.42
1967	957	1,569	1 373	875.3	0.41
1968	1,014	1,647	1 597	969.4	0.40
1969	1,087	1,670	1 844	1 104.7	0.39
1970	1,181	1,669	2 186	1 309.7	0.39
1971	1,237	1,813	2 239	1 235.2	0.41
1972	1,307	1,923	2 609	1 356.9	0.40
1973	1,419	2,145	3 048	1 420.7	0.41
1974	1,495	2,301	3 384	1 470.8	0.47
1975	1,550	2,466	3 634	1 473.3	0.52
1976	1,541	2,467	3 754	1 521.5	0.55
1977	1,629	2,578	4 010	1 555.2	0.59
1978	1,720	2,664	4 295	1 612.2	0.62
1979	1,921	2,928	4 981	1 701.4	0.65
1980	2,064	3,091	5 198	1 681.5	0.77
1981	2,004	2,515	5 590	2 223.1	0.83
1982	1,788	2,454	5 418	2 208.1	0.86
1983	1,682	2,235	5 398	2 414.8	0.87
1984	1,753	2,290	5 410	2 362.5	0.94
1985	1,913	2,273	5 675	2 333.4	0.99
1986	1,948	2,365	..	..	..
1987	2,092	2,555	..	..	..
1988	2,052	2,052	7 998	3 897.7	0.89
1989	2,238	2,238	8 515	3 804.7	0.92
1990	2,267	2,267	8 432	3 718.6	0.98
1991	2,098	2,098	7 425	3 539.2	1.02

From 1981-91: Levels I-IV;

All other years, Levels I-V which included specialty operations.

Sources: Statistics Canada: Catalogue Nos. 51-002, 51-206 and Internal Reports.

Indeed, activity in the helicopter sector more than doubled, going from close to 166 thousand hours in 1970, to just under half a million in 1980 (see Table 3.3). However, by 1982, total activity dropped off and continued to remain below 350 thousand hours throughout the last decade. Most of the helicopter activity in Canada was charter, with scheduled services accounting for only 2% of helicopter hours flown in 1991.

Canadian commercial helicopter operators also flew chartered services outside the country. This service accounted for over 15% of the total chartered helicopter hours flown in 1991.

Table 3.3

Helicopter Revenue Hours Flown, by Province, 1970-1991

Year	Total Canada	Nfld.	N.B., N.S. & P.E.I.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yuk.	N.W.T.
1970	165,520	9,503	794	21,950	12,325	8,880	3,429	15,047	41,894	19,447	32,451
1971	204,872	9,578	693	57,880	11,725	11,085	2,663	12,965	39,777	16,063	42,443
1972	222,143	8,144	308	76,513	12,737	10,809	3,865	11,866	34,672	14,304	48,925
1973	229,899	11,227	296	76,145	12,035	12,248	4,493	10,648	35,060	17,889	49,858
1974	245,116	16,414	2,821	72,034	17,111	14,139	5,786	14,723	35,114	22,520	44,454
1975	279,357	23,639	3,119	105,651	14,205	16,909	4,903	14,492	36,093	18,678	41,668
1976	273,288	22,981	3,073	85,513	23,418	19,169	6,868	16,371	39,609	18,426	37,880
1977	291,396	22,580	3,969	83,303	16,877	17,536	12,224	26,538	45,983	19,441	42,945
1978	337,906	22,335	5,247	108,947	14,684	11,457	14,232	38,797	69,203	18,770	34,234
1979	414,061	27,153	5,038	126,041	20,956	18,016	19,909	40,375	91,614	19,104	45,855
1980	472,025	24,049	5,279	107,305	34,344	16,978	28,465	68,892	107,728	24,210	54,775
1981	467,342	25,526	4,514	87,500	30,669	14,661	24,998	73,584	127,814	29,501	48,575
1982	336,296	23,980	6,154	58,249	26,936	8,401	10,134	71,518	88,680	14,895	32,349
1983	291,911	22,328	7,362	56,669	27,926	11,779	7,105	38,005	68,127	23,851	28,759
1984	279,053	24,587	9,277	40,291	24,051	11,994	9,094	45,404	70,248	8,484	35,673
1985	300,634	25,756	7,527	46,088	22,949	10,679	5,029	53,147	88,315	7,525	33,619
1986	277,059	25,956	5,449	49,925	33,879	10,468	4,593	37,815	70,564	8,213	30,197
1987	323,532	27,435	2,182	55,470	38,574	13,626	11,852	40,073	94,485	8,323	31,512
1988	306,036	18,065	177	56,910	25,788	18,215	18,846	49,117	86,620	7,931	24,387
1989	318,788	18,641	434	56,739	14,214	24,436	9,491	38,796	116,463	6,431	33,143
1990	329,532	14,347	1,657	61,235	18,255	16,569	6,079	41,580	145,239	6,562	23,009
1991	285,240	10,891	6,253	59,495	19,528	12,628	5,334	32,719	109,222	7,787	21,583

Sources: Statistics Canada: Catalogue Nos. 51-002, 51-004, 51-206 and Internal Reports.

Provincially, Quebec ranked first in the number of revenue hours flown until 1980. Two growth spurts of 83% between 1971 and 1975 and 47% between 1976 and 1979, were evident during the construction of the James Bay hydro project. Since 1980, the number of revenue hours flown declined over 45% to 59 thousand hours in 1991. Hydro Quebec was the largest user of chartered helicopters in the province. (2)

British Columbia took over and retained first place in the number of helicopter hours flown since 1980. Its market share also increased from approximately 23% in 1980 to 38% in 1991 (see Table 3.3). They were used for a diverse range of operations, from chartering, to forest management, to helicopter skiing.



Sikorsky S-55 helicopter was a real workhorse in developing Canada's rugged interior,
National Aviation Museum

The helicopter sector is heavily dependent on market forces external to it. As noted, it was very much influenced by the resource sector, particularly by logging and mining activity. Other activity included fire fighting, medical evacuation and traffic reporting. Any change or development in oil and gas exploration or in mega-construction projects, such as the James Bay development in the 1970s or Hibernia in the 1990s, also had a very large impact on the helicopter industry.

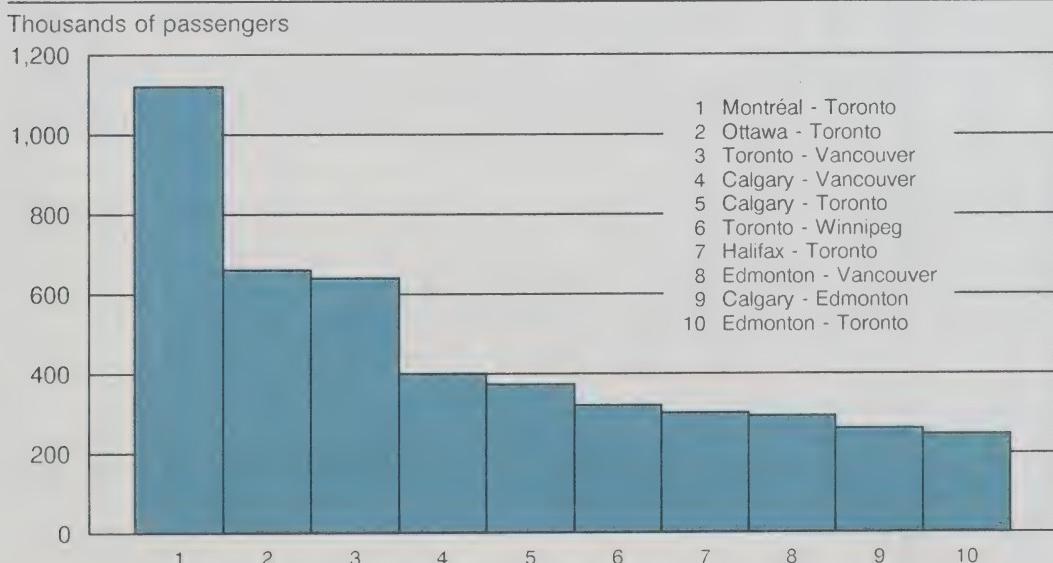
Domestic Scheduled Air Services

The city of Toronto has always dominated the scheduled domestic sector, serving as a focal point for much of the traffic flow throughout the country. However, since air traffic is often measured in terms of origin and destination, or city-pairs, it is more meaningful to look at the industry in this context.

Of the top 10 domestic scheduled city-pairs in 1991, seven involved Toronto, covering Canada from East to West. The Montréal-Toronto city-pair ranked as number one since 1970 and accounted for about 10% of total domestic traffic since 1984 (see Table 3.4). This city-pair carried almost twice the number of passengers carried by Ottawa-Toronto, the second ranked city-pair in 1991 (see Figure 3.1).

From 1970 to 1991, 15 of the top 25 Canadian city-pairs, grew by over 100% and in total, traffic increased 86%. Calgary-Toronto and Ottawa-Vancouver recorded the largest passenger gains in relative terms displaying the increased traffic flow between central and western Canada. These two city-pairs represented an actual growth of 396 thousand passengers (see Table 3.4). Only two city-pairs, Toronto-Windsor and Sault Ste. Marie-Toronto showed decreases during this time. These resulted when Air Canada decreased its DC-9 service to Windsor during the first quarter of 1989 and Air Ontario reduced its service to Sault Ste. Marie in the second quarter of 1989.

Figure 3.1
Scheduled Air Passenger Origin and Destination, Top 10 Domestic City-Pairs,
1991



Source: Statistics Canada: Internal Reports.

Table 3.4

**Scheduled Domestic Air Passenger Origin and Destination, Summary of Top 25 City-Pairs Ranked by Traffic Volume,
1970, 1975, 1980-1992**

1991 Ranking	City-Pair	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992P
Passengers ('000)																
1	Montréal - Toronto	675	963	1,127	1,115	988	972	1,085	1,198	1,221	1,224	1,360	1,448	1,122	1,041	
2	Ottawa - Toronto	306	496	575	559	571	557	624	633	635	671	789	785	660	654	
3	Toronto - Vancouver	163	302	532	547	459	469	495	458	785	686	796	784	670	640	
4	Calgary - Vancouver	166	291	455	472	470	440	437	430	493	396	434	425	421	400	
5	Calgary - Toronto	83	174	397	433	420	388	396	400	427	482	533	490	418	375	
6	Toronto - Winnipeg	171	238	316	301	305	299	305	322	347	353	405	402	354	317	
7	Halifax - Toronto	99	168	220	228	237	204	245	260	283	307	334	328	326	299	
8	Edmonton - Vancouver	139	254	377	378	373	352	353	349	401	322	346	336	331	294	
9	Calgary - Edmonton	235	413	723	690	487	389	362	351	312	328	303	332	288	260	
10	Edmonton - Toronto	70	139	298	307	301	265	274	270	308	323	358	341	290	245	
11	Thunder Bay - Toronto	85	144	192	181	173	166	172	196	206	187	204	194	197	176	
12	Montréal - Vancouver	78	118	169	151	142	143	149	147	184	156	186	196	169	181	
13	Vancouver - Winnipeg	90	133	192	176	164	180	179	173	188	160	170	177	171	156	
14	Ottawa - Vancouver	32	70	94	97	100	100	108	108	136	112	139	148	136	151	
15	St. John's - Toronto	35	69	96	90	89	84	96	100	111	125	134	135	128	114	
16	Calgary - Winnipeg	61	94	136	134	135	125	128	120	117	118	131	127	123	117	
17	Halifax - Montréal	90	112	116	122	115	106	118	118	120	127	143	127	140	112	
18	Halifax - Ottawa	33	66	76	83	82	81	91	99	94	104	118	113	128	109	
19	Prince George - Vancouver	58	99	177	153	134	115	112	115	119	98	130	129	131	108	
20	Calgary - Montréal	32	60	114	125	122	108	105	103	93	98	115	113	104	96	
21	Kelowna - Vancouver	48	120	149	154	143	125	128	152	135	121	153	144	135	88	
22	Québec - Toronto	37	78	88	86	84	82	97	100	102	107	113	116	91	81	
23	Regina - Toronto	31	62	85	79	89	77	83	87	89	96	100	93	79	88	
24	Toronto - Windsor	93	92	108	93	80	66	79	104	112	107	91	76	59	63	
25	Sault Ste. Marie - Toronto	61	95	115	114	95	89	97	116	127	101	98	60	53	43	
Others		3,149	5,518	7,965	6,655	5,799	5,255	5,555	5,406	5,117	4,792	5,979	5,564	5,804	5,089	5,194
Total		6,120	10,360	13,920	13,525	12,141	11,242	11,884	11,919	12,260	11,692	13,624	13,105	13,030	11,371	11,369

Note: Some totals may not add due to rounding.
Source: Statistics Canada: Catalogue No. 51-204.

February 28, 1919 – The first international air passenger by heavier-than-air-machine arrived in Canada when W.E. Boeing was flown to Vancouver, British Columbia, from Seattle, Washington, in a Boeing C-700 seaplane by Edward Hubbard.(1)

The number of passengers travelling on domestic scheduled services increased from just over six million in 1970 to its all time maximum of nearly 14 million passengers in 1980; a phenomenal surge of about 127%. However, there was a drop in the total number of passengers between

1980 and 1984 which, in turn, affected most city-pairs. In fact, most of the leading 25 city-pairs experienced declines in passenger travel. The end of the 1980s recession did not necessarily mean the recouping of lost passengers. In half the major 25 city-pairs, the traffic lost during the recession had still not been recaptured by 1985 (see Table 3.4).

The city-pair that was the hardest hit was Prince George-Vancouver, with a decline of 35% between 1980 and 1985.¹⁰ Western Canada, in general, was most severely affected with six city-pairs, Calgary-Edmonton, Edmonton-Vancouver, Calgary-Vancouver, Vancouver-Winnipeg, Calgary-Winnipeg, Kelowna-Vancouver and Prince George-Vancouver remaining below their 1980 level in 1991.

Some city-pairs, however, rebounded to recoup the losses they suffered in the early 1980s. Two such examples were Kelowna-Vancouver and Toronto-Windsor. Kelowna-Vancouver increased its scheduled passenger traffic by 19% in 1985 over 1984. This recovery was largely the result of increased competition between domestic scheduled and domestic charter services. Toronto-Windsor, on the other hand, increased its 1985 passenger traffic by 32% over the previous year, mostly the result of a new service by Nordair introduced in November of 1984. Sault Ste. Marie-Toronto also rebounded in 1985 but all three of these city-pairs have, in general, shown declines since then. The Toronto-Windsor and Sault Ste. Marie-Toronto routes had been serviced by Austin Airways. Air Ontario merged with Austin Airways and was, in turn, bought by Air Canada. The two airlines were merged in 1987 and many of the Austin Airways routes were subsequently sold. The Air Ontario strike during 1988, also affected traffic on these routes.

Domestic passenger city-pair traffic began a decline leading into the economic downfall of the 1990s. All top 25 city-pairs showed decreases from the peak in 1988 to 1991, with total domestic passenger traffic declining about 17% (see Table 3.4).

Canada-United States and Other International Scheduled Services

The international scheduled markets (composed of Canada to the United States and to other international destinations) outgrew the domestic scheduled market on an origin and destination basis from 1975 to 1980. The number of scheduled international air passengers increased by over 66%, going from over eight million in 1975 to nearly 14 million in 1991, while the number of scheduled domestic air passengers went up by 10%.

In 1975, about half of the total international scheduled passengers were carried by major Canadian airlines, while in 1991, these carriers transported 41% of all international scheduled passengers, a loss of eight percentage points over this period. Canadian carriers flew approximately 32% of passengers in the transborder market (Canada-United States) and 50% of the Canada-other international markets in 1991.

¹⁰ Although Calgary-Edmonton showed a longer decline of 52%, it occurred as a result of a survey reporting problem.

They lost approximately 18 percentage points of the transborder market to foreign carriers from 1975 to 1980 and lost another eight percentage points in this market between 1980 and 1991. They did, however, show a nine percentage point gain in the other international market between 1975 and 1991 (see Figure 3.2).

With 80% of Canadians living within 200 kilometres of the United States border and the United States being Canada's biggest trading partner, Canada's prime international market was always the continental United States. Although there were minor fluctuations, approximately three of every five international scheduled passengers headed for the United States.

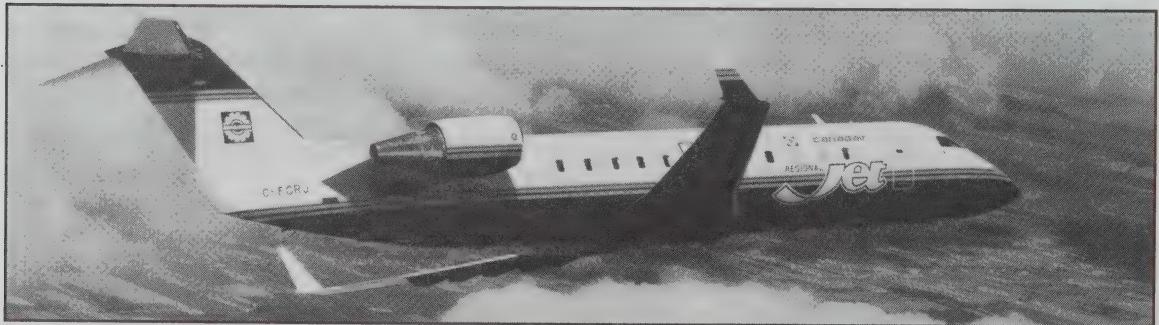
In the scheduled Canada-United States market, Toronto once again occupied the key position, with four of the five top city-pairs including this city and just under half of all scheduled transborder passengers originating from or destined for Toronto in 1991. Toronto-New York and Montréal-New York ranked first and second, respectively in every year from 1970 to 1991. The third place city-pair was Toronto-Chicago (see Table 3.5).

However, while Montréal-New York maintained its position as the second largest scheduled service city-pair, it declined both in the absolute numbers of passengers and by comparison to the first place and third place city-pairs. With the brief introduction of a new service by People Express between Montréal and New York in 1985, and with the economic upturn, there was a reversal of this trend for the next two years. It experienced a 24% increase in passenger traffic over 1984 and in 1986, a 12% increase over 1985 (see Table 3.5).

Europe, with 20% of the international traffic, was the second largest scheduled international market following the United States. The Asian market was next, accounting for about 10% in 1991. It grew from about 4% in 1980 due to the economic growth seen in the Pacific Rim. The remaining sector market shares were small. The southern market, composed of Bermuda, the Bahamas, the Caribbean Islands, Mexico, Central America and South America were next, accounting for about 7% of all scheduled international services. Africa hovered around the 2% mark, while the Pacific region (Australia, New Zealand, Melanesia and Polynesia) accounted for 1% in 1991 (see Figure 3.3).

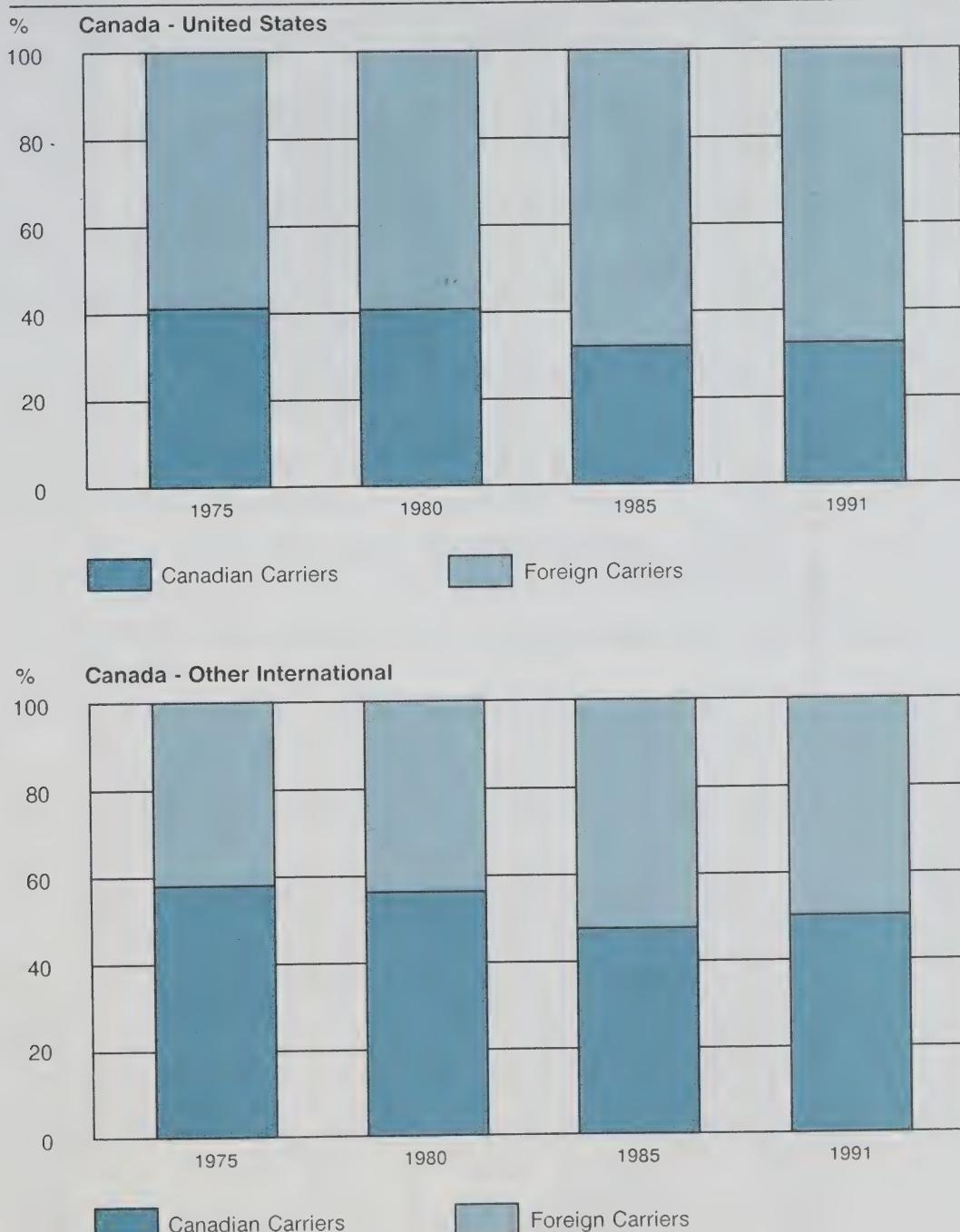
There were some volume changes in overall scheduled international travel over the last decade (see Figure 3.4). However, while there were overall fluctuations, the sector market shares remained quite stable (see Figure 3.5).

The international scheduled market continued to be much larger than the international charter market. The number of scheduled international air passengers was over three times larger than the 4.3 million international charter passengers in 1991.



Canadair Regional Jet, Canadair

Figure 3.2
**Canadian and Foreign Carriers Market Share, International
 Scheduled Services, 1975, 1980, 1985, 1991**



Note: Enplaned/Deplaned passengers for Canadian carriers. Arriving/Departing passengers for Foreign carriers.

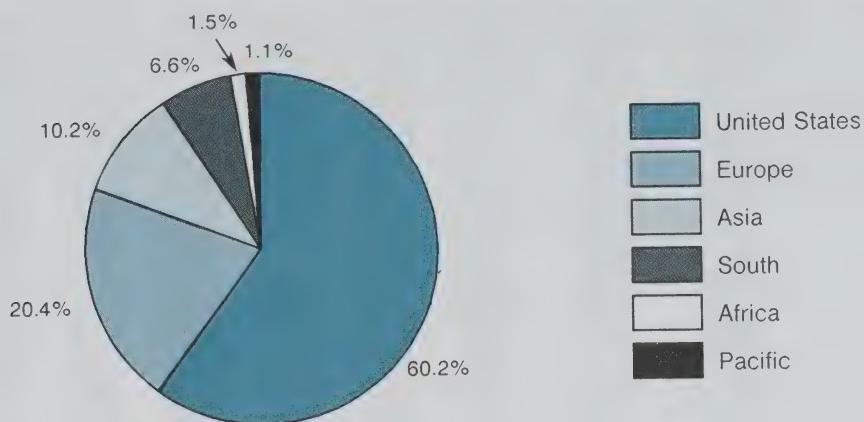
Source: Statistics Canada: Internal Reports.

Table 3.5
Scheduled Transborder Air Passenger Origin and Destination, Summary of Top 15 City-Pairs Ranked by Traffic Volume,
1970, 1975, 1980-1991

1991 Ranking	City-Pair	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Passengers ('000)															
1	Toronto - New York	450	488	683	623	559	560	624	637	747	723	755	806	839	723
2	Montréal - New York	382	331	354	320	305	284	330	410	461	340	384	349	382	342
3	Toronto - Chicago	140	172	210	202	190	197	222	228	260	283	338	315	321	298
4	Toronto - Los Angeles	70	105	188	178	143	161	148	162	198	202	213	221	260	242
5	Toronto - Boston	63	87	137	136	140	160	173	171	200	223	246	265	264	236
6	Toronto - Miami	80	115	157	158	159	130	137	134	155	146	161	194	214	228
7	Vancouver - Los Angeles	61	123	197	187	156	175	176	184	253	158	191	245	252	226
8	Toronto - Tampa/ St. Petersburg	47	89	172	147	153	121	125	108	113	123	121	157	215	193
9	Toronto - San Francisco/ Oakland	32	66	137	131	102	111	109	129	130	135	159	183	184	181
10	Montréal - Miami	80	172	240	230	199	157	161	166	172	157	169	178	182	172
11	Vancouver - San Francisco	81	120	145	139	119	126	129	133	211	101	124	128	158	169
12	Calgary - Los Angeles	14	34	103	91	87	87	92	97	104	127	129	131	118	
13	Montréal - Boston	89	110	134	131	124	124	133	129	161	151	150	134	114	92
14	Toronto - Washington/ Baltimore	36	58	80	78	79	90	92	97	106	118	111	115	79	
15	Toronto - Detroit	47	54	64	57	52	58	78	89	96	94	74	72	76	69
Others		1,867	3,201	4,649	4,585	4,040	3,808	4,141	3,975	4,388	4,288	4,834	4,810	5,384	4,972
Total		3,538	5,324	7,650	7,411	6,609	6,339	6,865	6,839	7,740	7,336	8,164	8,297	9,091	8,340

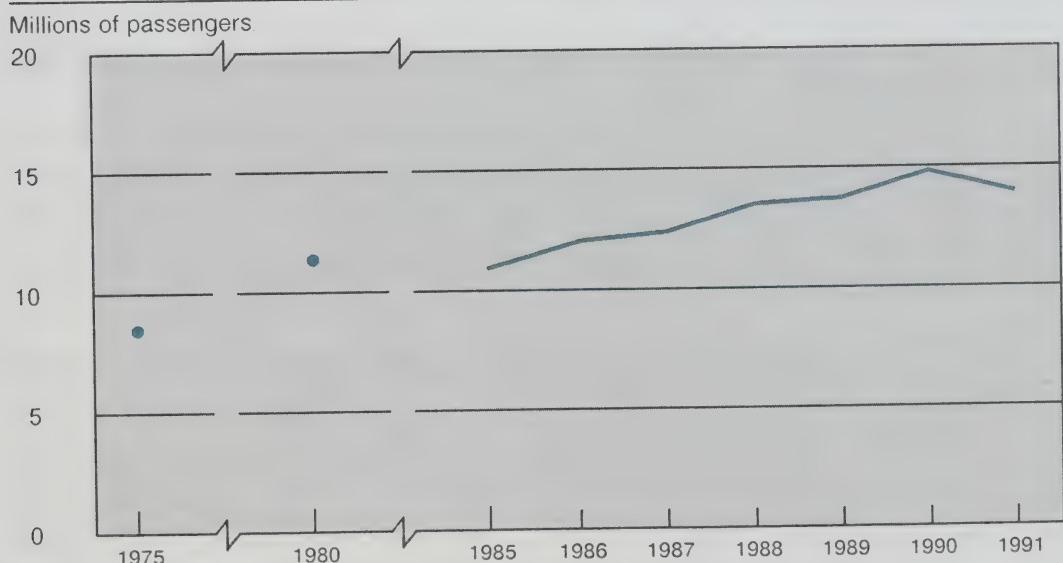
Note: Some totals may not add due to rounding.
Source: Statistics Canada: Catalogue No. 51-205.

Figure 3.3
International Scheduled Passenger Origin and Destination, by World Area, 1991



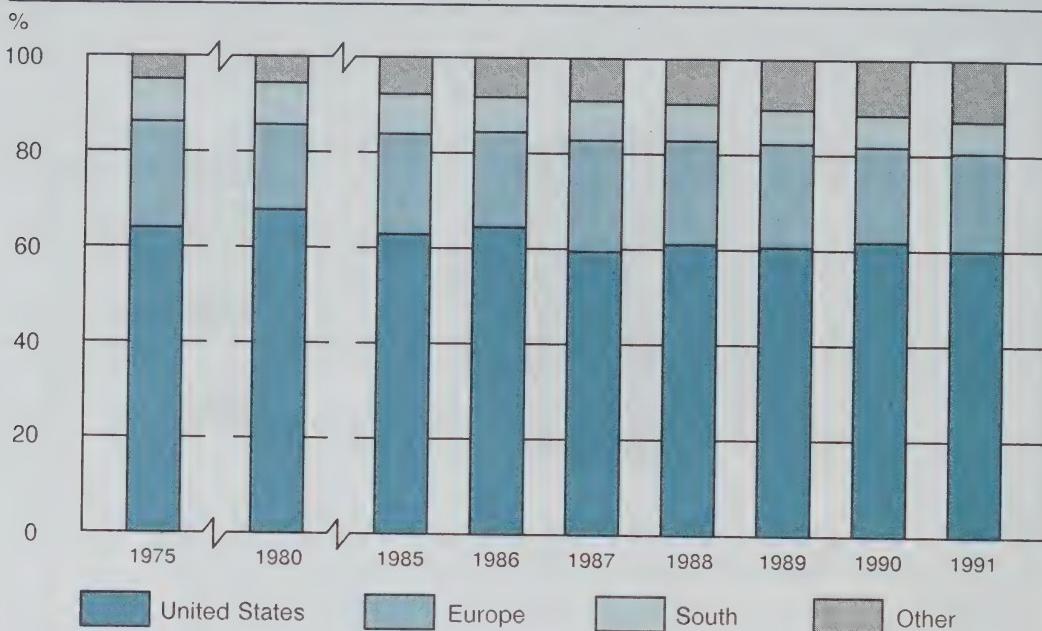
Sources: Statistics Canada: Catalogue No. 51-205 and Internal Reports.

Figure 3.4
International Scheduled Passenger Origin and Destination, Estimates, 1975, 1980, 1985-1991



Sources: Statistics Canada: Catalogue No. 51-205 and Internal Reports.

Figure 3.5
International Scheduled Passenger Origin and Destination, Sector Market Share, 1975, 1980, 1985-1991



Sources: Statistics Canada: Catalogue No. 51-205 and Internal Reports.

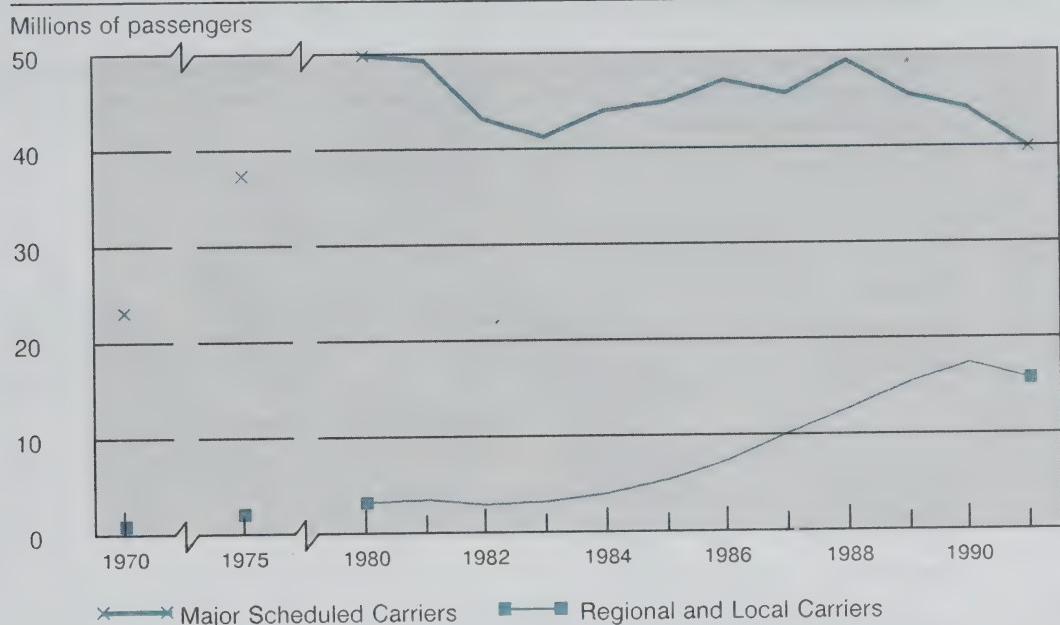
The Regional and Local Carrier Segment of the Air Industry

In addition to carriers that provided scheduled services on transcontinental and regional routes, there were well over a hundred carriers in Canada that offered services of a more local nature. The regional and local carrier segment of the air transport industry, for decades, played an important role in the economic life of a large number of communities.

Regional and local carriers serviced remote areas in support of seasonal operations or large resource-based developments like mining, oil drilling, and hydro projects. Still others were involved in high-frequency service. The diversity of operations was reflected in the wide scope of carriers. At one end of the range were the carriers with one or two piston aircraft transporting a few hundred passengers per month; at the other end were the fleets of turbo-props with forty to sixty seats providing domestic or transborder services and carrying tens of thousands of passengers every month.

Passenger traffic on regional and local carriers increased by a dramatic 314% from 1970 to 1980, increasing an additional 487% up to 1990. During this period, the regional and local carriers' share of total scheduled services increased from 3% in 1970, to 6% in 1980 and to 28% in 1990 (see Figure 3.6).

Figure 3.6
Distribution of Passenger Traffic, for Major Scheduled and Regional and Local Carriers, 1970, 1975, 1980-1991



Note: Passengers on intraline connectors are not included.

Sources: Statistics Canada: Catalogue Nos. 51-005, 51-203 and Internal Reports.

The relatively high traffic growth in regional and local services was partially the result of the transfer of services from the major carriers to regional carriers in setting up the hub and spoke networks. The policy revisions to the Canadian air regulations provided for the removal of certain licence restrictions and entry barriers in southern Canada in 1984 (see Figure 3.7). As affiliations were made between the major carriers and these regional carriers, the growth trend increased.

Provincially, the rank order of regional and local passenger traffic changed in the past decade. First and second place oscillated between Ontario and British Columbia. Ontario had the largest number of local service passengers followed by British Columbia and then Alberta in the early 1980s. This partly resulted from increased activity in the oil industry in western Canada and an increase in the families' strength (see Table 3.6). When Air Alliance became a feeder to Air Canada in 1988, local traffic increased 123% in Quebec over a year earlier, making this province the third largest in terms of local passenger traffic, a place it continued to hold. Nova Scotia also saw noteworthy increases in local passenger movements, especially from 1985 to 1986. Air Atlantic and Air Nova, both began operations in this year in competition with one another. As well, local passenger movements in the Prairie provinces of Manitoba, Saskatchewan and Alberta remained recession-proof between

1990 and 1991 when they recorded increases of 11%, 59% and 8%, respectively while other provinces showed declines. Although overall total traffic declined in these three provinces, the major carriers passed their traffic to Air BC and Time Air, creating an increase in the amount of local traffic (see Chapter 2).

Scheduled services, although the greatest part of air traffic movements, were often supplemented by charter services. The industry witnessed greater numbers of strictly charter carriers.

Table 3.6

Regional and Local Carriers, Passenger Traffic, by Province/Territory, 1983-1992

Province/Territory of Origin/ Destination	Total Enplaned & Deplaned Passengers									
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992P
Newfoundland	48,897	52,712	73,478	193,207	357,426	463,362	623,216	761,180	676,186	677,532
Prince Edward Island	-	-	-	19,965	83,280	108,540	130,680	152,378	146,030	161,091
Nova Scotia	11,685	11,652	12,643	219,621	576,494	741,627	980,661	1,177,948	1,030,088	1,084,436
New Brunswick	3,690	3,678	682	96,158	169,808	274,077	467,903	549,486	460,341	500,078
Québec	343,294	319,350	392,452	653,449	918,731	2,048,372	2,629,336	2,991,650	2,439,415	2,238,428
Ontario	924,289	1,163,510	1,845,805	2,169,298	2,770,773	3,142,540	3,691,691	4,412,913	3,853,211	3,580,691
Manitoba	226,912	243,480	243,972	276,447	331,058	400,327	424,646	482,967	537,649	618,142
Saskatchewan	85,271	96,997	114,673	152,981	202,628	239,928	308,445	284,398	451,239	624,006
Alberta	436,393	520,016	657,193	666,308	749,023	971,630	1,475,359	1,571,297	1,694,065	1,792,466
British Columbia	742,389	1,224,808	1,570,400	2,301,494	2,622,698	3,614,147	4,145,046	4,411,445	4,140,315	4,149,854
Yukon Territory	25,070	24,941	19,360	12,176	11,567	39,731	38,098	32,342	24,871	38,348
Northwest Territories	199,954	224,520	244,654	259,606	297,393	391,446	428,342	417,820	398,464	387,328
Total Canada	3,047,844	3,885,664	5,175,312	7,020,710	9,090,879	12,435,727	15,343,423	17,245,824	15,651,874	15,852,400

Source: Statistics Canada: Catalogue No. 51-005.

Figure 3.7
Map of Canada, Northern and Southern Sectors



Charter Passenger Services in Canada and Abroad

In Canada, the long-haul charter business began with the introduction of wide body jets in the 1970s and the change in charter regulations beginning in the late 1980s. Domestic charter services, using large aircraft, witnessed impressive fluctuations in the last 12 years. The growth partially resulted from their use as a lower cost alternative to scheduled services and was partially explained by the increase in new charter carriers, while the declines occurred with the subsequent bankruptcies, as previously discussed (see Chapter 2).

The number of passengers travelling on charters within Canada increased almost 200% from 1980 to its height in 1985. The domestic charter market at this time was largely operated by Wardair and the airlines that would become a part of Canadian Airlines International Limited (see Chapter 2). Wardair, having received government permission to operate scheduled services in 1985, began placing its efforts on competing in the domestic scheduled market. As Wardair began converting from charter routes to scheduled, moving their passengers with them, new carriers in the industry took the opportunity to fill the vacated charter services. In spite of these new carriers, the next three years witnessed a dramatic drop of 95% in domestic charter passenger traffic, largely Wardair's market share, to a total of under 20 thousand passengers in 1988 (see Table 3.7).

Starting a new charter airline was made substantially easier with deregulation in 1988, and the void left by Wardair. Wardair was experiencing financial difficulties by 1989 and was bought by PWA Corp. With deregulation, there was also no longer a regulatory distinction made between charter and scheduled carriers in southern Canada (see Figure 3.7). The domestic charter passenger traffic increased another 20 fold from 1988 onwards, to reach 439 thousand passengers in 1991 (see Table 3.7).

Domestic charter services are primarily long-haul in nature. The top five city-pairs for domestic charters accounted for over 80% of the total number of domestic charter passengers carried in 1985. By 1991, charter carriers held only a 75% market share of total domestic passengers for the top five city-pairs as the market share for scheduled carriers had increased. All top five charter city-pairs involved Toronto in 1985, and four of the five involved cities 1 500 kilometres or more apart. Toronto-Halifax was the exception at 1 287 kilometres, ranking fourth in 1985 and eighth in 1991. Four of five city-pairs included Toronto in 1991, with the exception of Montréal-Vancouver which ranked third (see Table 3.7). Toronto-Vancouver historically far outweighed the others as the city-pair with the largest number of domestic charter passengers.

Domestic charter services were traditionally smaller than those in the international market, both in terms of passengers carried and revenue earned. Domestic charter passengers represented only 18% of the total charter market in 1991. Domestic charter flights allowed charter operators to use their fleet during the off-season and to supplement their international charter flight income.

International charter services also showed tremendous growth in the past 15 years, greatly impacting on the industry. International charter activity was primarily between Canada and Europe during the 1960s and 1970s. About 77% of international charter passengers went from Canada to Europe in 1970.

This period had stringent 'affinity' regulations governing the purchase of tickets on charter flights. With the affinity concept, passengers had to belong to an organization with activities other than simply the arrangement of international transportation. Those on a charter had to be members of a club or a group for a period of at least six months prior to flight departure. There was also a stipulation that those on the flight

Table 3.7

Domestic Charter Passenger Traffic, Top 10 City-Pairs, 1980-1992

Ranking	City-Pair	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 ^a
Passengers ('000)														
1	Toronto – Vancouver	49.9	62.0	111.6	152.9	121.1	163.1	66.8	21.7	1.6	46.0	151.7	155.4	179.7
2	Calgary – Toronto	18.9	68.6	69.9	74.9	61.3	57.8	17.1	8.4	0.2	12.9	48.7	76.9	64.8
3	Montréal – Vancouver	–	2.5	6.3	8.5	10.6	0.7	16.5	5.7	2.3	6.1	43.6	35.4	49.3
4	Edmonton – Toronto	7.7	17.0	24.4	48.1	39.8	54.8	3.0	1.2	0.2	4.3	7.0	34.1	42.1
5	Toronto – Winnipeg	3.8	2.7	2.4	6.6	18.0	6.9	0.2	–	–	0.3	13.6	28.5	46.8
6	Calgary – Vancouver	2.1	1.3	4.7	–	2.8	0.3	2.0	0.4	–	0.7	1.5	26.7	10.0
7	Vancouver – Winnipeg	0.4	–	8.9	–	0.1	0.5	18.9	4.3	–	–	10.9	15.8	43.9
8	Halifax – Toronto	0.4	–	–	18.8	11.5	10.0	1.1	0.3	0.2	3.9	12.4	12.9	21.4
9	Edmonton – Vancouver	5.0	3.2	1.0	1.6	1.1	0.1	20.1	0.7	0.2	0.8	0.6	11.2	4.5
10	St. John's – Toronto	0.8	1.6	2.1	1.8	1.6	–	–	–	–	5.5	6.8	5.9	15.6
Others		31.3	33.8	23.7	25.3	41.7	66.0	50.0	20.1	15.0	11.7	32.4	36.2	49.3
Total		120.3	192.7	255.0	338.5	309.6	360.2	195.7	62.8	19.7	92.2	329.2	439.0	527.4

Note: Some totals may not add due to rounding.

Sources: Statistics Canada: Catalogue No. 51-207 and Internal Reports.

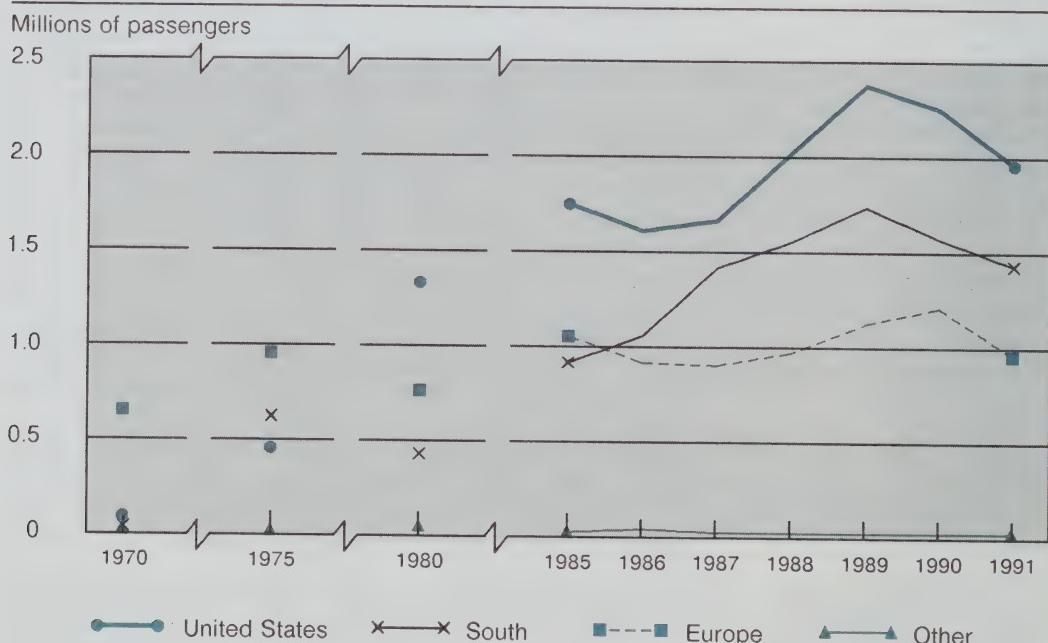
travelled from the same point to the same destination and returned as a group. Since the affinity concept was difficult to enforce, in late 1972, the regulations were changed with the introduction of advanced booking charters. This new charter type used a minimum pre-booking deadline and a minimum stay provision instead of the affinity concept, to prevent diversion of traffic from scheduled to charter services.

The impact of this change was significant. While passenger levels were over two million in 1980, at its height in 1989, the number of passengers travelling on international charters surpassed five million. The 1989 passenger levels were caused by lower fares which, in turn, were due to increased competition as a result of easier entry into the charter business with deregulation and the demise of Wardair. Canada-Europe traffic grew to a height of over one million passengers in 1990. The most impressive growth was in the traffic to the United States and to southern destinations such as the Caribbean sunspots (see Figure 3.8).

Charter service between Canada and the United States increased almost 400% between 1970 and 1975, to about half a million passengers. This traffic grew to its overall height of over two million passengers in 1989 but was subsequently followed by declines (see Table 3.8).

Most Canadians flying in the Canada-United States charter market were looking for a place in the sun. Of the ten principal city-pairs in 1985, eight involved either Florida or Hawaii. The destinations of eastern and western Canadians were also different. Florida was still as popular as ever in 1991, particularly for vacationers from Quebec and Ontario. Tourists from the West tended to go to Hawaii in 1985 and to Reno and Las Vegas in 1991 (see Table 3.8).

Figure 3.8
International Charter Passengers, by World Area,
1970, 1975, 1980, 1985-1991



Source: Statistics Canada: Catalogue No. 51-207.

Table 3.8

International Charter Passenger Traffic, Top 10 City-Pairs, Canada-United States, 1970, 1975, 1980-1992

1991 Ranking	City-Pair	Passenger ('000)												1991	1992 ^p
		1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		
1	Montréal – Fort Lauderdale	...	15	37	134	185	147	167	137	154	156	210	238	255	236
2	Toronto – Clearwater/ St. Petersburg	–	49	71	80	81	96	96	103	101	121	128	187	197	214
3	Toronto – Orlando	2	1	82	102	94	108	100	108	110	133	189	264	264	212
4	Toronto – Las Vegas	5	22	15	35	45	42	52	117	111	151	194	213	205	176
5	Toronto – Fort Lauderdale	–	26	49	56	87	101	124	135	113	109	130	206	201	169
6	Toronto – Fort Myers	1	–	2	5	–	–	17	33	45	42	44	66	85	83
7	Québec – Fort Lauderdale	–	..	8	34	47	37	37	35	34	23	31	42	54	71
8	Vancouver – Reno	–	15	86	101	105	102	103	92	80	92	89	79	79	68
9	Montréal – Orlando	–	1	34	37	24	35	31	28	35	44	53	61	70	57
10	Vancouver – Las Vegas	2	3	56	49	41	35	35	37	34	35	34	37	42	46
	Others	85	326	894	845	925	871	847	921	792	762	921	980	765	620
	Total	95	458	1,334	1,478	1,634	1,574	1,609	1,746	1,609	1,668	2,023	2,373	2,249	1,952
															2,126

Note: Some totals may not add due to rounding.

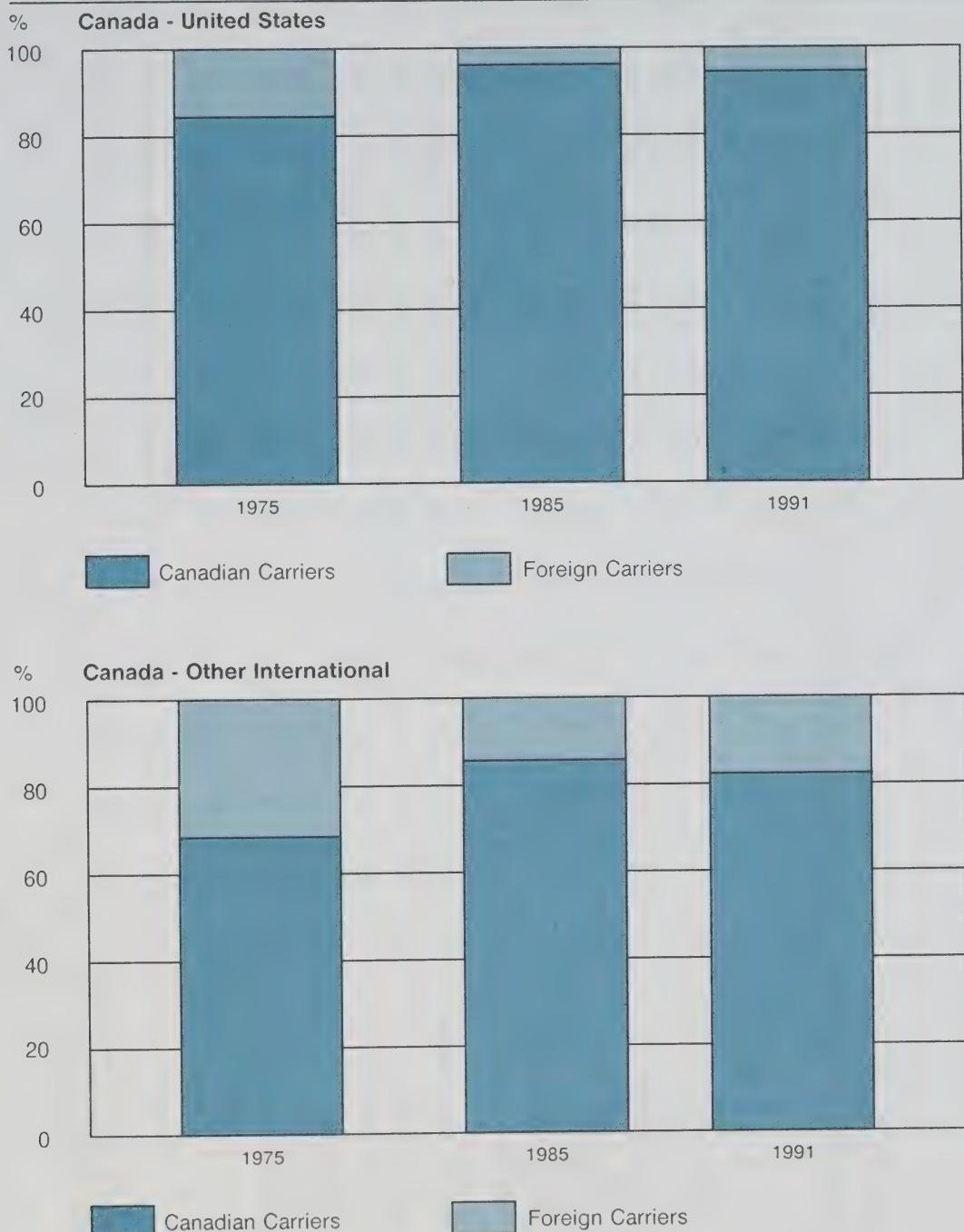
Source: Statistics Canada: Catalogue No. 51-207.

Traffic between Canada and southern non-United States points also reported significant increases, from about 74 thousand passengers in 1970 to its peak of almost two million passengers in 1989. There was tremendous growth in Canada-Mexico travel from 1983 on, largely because of the devalued peso. The top three Canada-Mexico city-pairs accounted for over 14% of this growth (see Table 3.9). Dependent on favourable economic conditions and the value of the Canadian dollar, passenger traffic to the South declined to over one million passengers in 1991 (see Table 3.9).

If, on the other hand, Canadians were headed to Europe, the first and foremost market of the United Kingdom in 1985 was replaced by France since 1986. Of the top five city-pairs since 1975, three involved the United Kingdom. Four city-pairs, namely Toronto-London, Toronto-Manchester, Toronto-Glasgow and Vancouver-London, accounted for almost half of the Canada-Europe charter traffic in 1970. As other European destinations increased in popularity, these four city-pairs represented only 18% in 1991 (see Table 3.10). A portion of the large decline in travel to the United Kingdom, coincided with the demise of Worldways, which ceased operations in late 1990 (see Chapter 2).

In comparison to international scheduled services, Canadian carriers increased their market share of passengers in the international charter services. They transported 94% of all the international charter passengers to the United States and 82% of the charter passengers in the international markets other than the United States in 1991. Comparable figures for 1975 were 84% and 69%, respectively (see Figure 3.9).

Figure 3.9
Canadian and Foreign Carriers, Passenger Market Share, International Charter Services, 1975, 1985, 1991



Sources: Statistics Canada: Catalogue No. 51-207 and Internal Reports.

Table 3.9

International Charter Passenger Traffic, Top 10 City-Pairs, Canada-South, 1970, 1975, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992²⁰

1991 Ranking	City-Pair	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 ²⁰
Passengers ('000)																
1	Toronto – Cancun (Mexico)	–	–	12	10	14	46	38	29	33	40	37	67	92	95	94
2	Montréal – Cancun (Mexico)	–	–	11	6	4	15	22	28	29	30	27	59	91	87	64
3	Montréal – Puerto Plata (Dominican Republic)	–	–	2	2	–	1	18	35	44	62	61	87	90	78	92
4	Montréal – Acapulco (Mexico)	1	22	50	34	26	61	83	61	63	98	120	111	85	72	65
5	Toronto – Puerto Plata (Dominican Republic)	–	–	2	17	16	20	31	57	75	108	97	111	84	59	56
6	Toronto – Puerto Vallarta (Mexico)	1	2	12	11	15	36	43	39	47	88	104	108	75	58	57
7	Montréal – Havana (Cuba)	–	20	–	–	1	..	..	1	1	–	1	19	61	55	43
8	Toronto – Acapulco (Mexico)	1	38	32	32	40	93	90	73	85	112	110	111	80	51	46
9	Toronto – Santo Domingo (Dominican Republic)	–	..	2	..	–	–	1	26	39	47	29	68	56	40	53
10	Toronto – Nassau (Bahamas)	3	52	4	13	14	28	23	32	23	24	28	29	19	36	46
Others		68	487	303	236	263	310	407	537	615	802	943	960	834	799	924
Total		74	621	430	361	393	610	756	918	1,054	1,411	1,557	1,730	1,567	1,430	1,540

Note: Some totals may not add due to rounding.

Source: Statistics Canada: Catalogue No.51-207.

Table 3.10

International Charter Passenger Traffic, Top 10 City-Pairs, Canada-Europe, 1970, 1975, 1980-1992

1991 Ranking	City-Pair	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 ^p
Passengers ('000)																
1	Montréal – Paris (France)	19	37	21	20	40	38	60	108	141	163	216	276	308	198	196
2	Toronto – London (United Kingdom)	175	243	131	112	131	156	148	182	110	116	119	130	114	66	93
3	Toronto – Amsterdam (Netherlands)	51	71	44	34	41	38	49	47	29	33	49	46	67	65	55
4	Toronto – Manchester (United Kingdom)	22	57	73	76	77	83	79	77	61	21	28	49	69	47	62
5	Toronto – Glasgow (United Kingdom)	56	64	79	75	88	75	75	75	75	36	76	82	95	44	42
6	Toronto – Warsaw (Poland)	–	6	–	..	–	4	7	9	12	12	17	22	27	32	39
7	Toronto – Belfast (United Kingdom)	–	6	24	20	26	23	21	25	25	31	28	31	35	30	33
8	Toronto – Paris (France)	1	3	..	3	7	13	12	14	17	25	31	21	20	30	43
9	Toronto – Ponta Delgrada (Azores)	–	–	–	–	–	–	–	8	20	13	19	22	21	28	28
10	Toronto – Frankfurt (Germany)	10	37	43	46	47	41	32	38	42	53	49	34	24	26	16
Others		319	437	348	379	420	445	462	479	389	395	348	409	431	392	448
Total		653	961	763	765	877	916	947	1,062	921	898	980	1,122	1,211	958	1,055

Note: Some totals may not add due to rounding.
Source: Statistics Canada: Catalogue No. 51-207.

Cargo and Other Goods

While passenger traffic was the major industry component, goods traffic was also extremely important. Goods included freight, express, mail and excess baggage. The volume of goods transported within Canada by Canadian carriers increased 57% between 1970 and 1980. The 521 million kilograms of domestic goods carried in 1991 was a 46% increase over the 1980 total (see Table 3.11).

Internationally, goods carried on scheduled services (by Canadian carriers) to and from the United States also saw an impressive increase of 135% between 1980 and 1991, with the volume of chartered goods contributing significantly in the years 1987 to 1991. A third noteworthy area of service, the Pacific and Orient, increased 186% in total kilograms of goods carried from 1980 to 1991.



Mc Donnell Douglas DC 8 Freighter is used by Air Canada,
Air Canada

Goods carried by air were usually time sensitive, of high value or perishable in nature. Time sensitive goods included express parcels promised with overnight delivery. Examples of goods of high value included electronic equipment or precision type instruments. Perishable goods included pharmaceuticals and products such as live lobsters. Competition in the transportation of goods forced carriers to segment next-day service into time slots and to implement tracking systems for goods throughout the various steps in a journey.

As noted, just as with passenger services, goods were carried on scheduled services or on charter flights. In both cases, the goods supplemented the passenger load, in the form of bellyhold cargo, or the whole aircraft was dedicated to carrying goods. Air Canada, for example, carried cargo on their passenger flights and also has a dedicated DC-8 scheduled cargo fleet.

Increasingly, a third alternative was used. Aircraft were built or converted into combi-aircraft. As the name implies, these aircraft had moveable bulkheads and sections of seats that enabled the number of available passenger seats and the amount of cargo space to be quickly and easily changed depending on demand. These aircraft were generally wide-bodied since large consignments were more difficult to load and unload from narrow-bodied aircraft and shippers and freight forwarders were less likely to break shipments into less than truckload shipments.

Table 3.11

Goods Carried, by Area of Service, Canadian Air Carriers, 1970, 1975, 1980-1991

Year	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Scheduled Services														
Goods Carried ('000 kg)														
Transborder	23 278	30 513	36 169	35 237	35 817	36 263	44 819	45 921	47 137	44 810	54 528	54 264	59 676	66 675
Transatlantic and Polar	22 375	32 858	44 745	45 186	44 876	50 981	64 321	67 428	62 402	61 375	86 636	87 651	94 449	95 515
Southern	6 649	8 574	7 423	7 123	6 717	5 720	6 521	6 616	5 049	5 817	11 119	9 769	9 537	12 378
Pacific and Orient	6 008	5 985	9 249	10 777	11 574	12 285	12 443	12 724	14 088	14 478	20 655	25 100	26 940	26 468
Other Foreign Domestic	114 064	167 010	188 090	191 950	195 402	198 733	290 698	292 842	298 633	292 399	420 488	432 733	418 476	411 874
Goods Tonne- Kilometres ('000)	33 062	53 354	77 708	84 756	87 489	97 633	109 156	110 087	102 727	98 022	101 265	147 087	138 675	165 295
Transborder	142 488	196 421	289 488	309 220	314 629	361 362	445 487	451 233	454 057	444 462	552 379	585 548	609 094	630 756
Transatlantic and Polar	26 829	34 054	26 432	27 155	27 711	26 082	33 621	35 727	24 146	26 774	37 398	54 485	44 849	50 415
Southern	19 338	48 088	71 123	82 735	93 200	97 810	96 124	97 021	124 530	130 818	153 960	181 029	186 606	163 275
Pacific and Orient	-	-	-	-	-	-	-	-	6 440	7 010	37 444	70 510	83 707	198 301
Other Foreign Domestic	212 189	303 355	380 375	361 395	395 832	392 975	429 959	431 971	459 979	475 044	460 044	535 854	545 510	514 599
Charter Services														
Goods Carried ('000 kg)														
Transborder	778	2 583	680	2 467	3 140	4 937	6 442	6 624	9 172	19 076	15 167	16 844	16 887	19 941
Transatlantic and Polar	1 335	9 647	1 821	1 223	754	1 488	3 264	2 511	6 071	4 905	3 128	3 524	1 381	3 351
Southern	871	65	4 296	7 497	4 701	3 023	620	641	1 293	3 009	3 445	3 072	2 224	3 887
Pacific and Orient	17	117	-	-	-	-	-	-	-	-	1 178	98	34	-
Other Foreign Domestic	112 424	152 230	168 543	150 191	124 656	132 568	134 415	136 528	128 945	133 043	177 168	118 683	108 256	109 098

Source: Statistics Canada. Catalogue No. 51-002.

There were many interesting patterns in the shipment of goods in Canada. Domestic carriage within Canada was by far the largest market for both scheduled and charter services. Between 1970 and 1991, 65 to 70% of goods carried on scheduled services were in the domestic sector, while for charter services, goods carried in the domestic sector accounted for more than 90% until 1985 although they since declined to under 60% in 1991. Of note, the percentage of chartered goods shipped to the United States increased from less than 1% in 1970 to over 13% in 1991 (see Table 3.11).

However, the stronger growth was in scheduled services. In fact, during the period from 1970 to 1991, goods traffic for scheduled services increased by 265%, while for the charter market, it grew by only 29%.

Flexibility of service was the nature of the charter business. Charter carriers offered services and flew according to wherever the goods were destined; the goods determined the flight itinerary. With scheduled services, the routes were more rigid, with bellyhold cargo depending more on passenger flight routes.

To a much greater degree, carriers and freight forwarders attempted to find goods that were destined to already determined points on the flight path. For scheduled services, growth was strong in all areas, except for the southern market, which only began to gain strength in the late 1980s and early 1990s.

The tremendous growth, as outlined in this chapter, had important effects on the financial performance of Canadian aviators. The following chapter outlines the economics in the aviation industry both historically and in modern times.

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- (2) Helicopters, Issues 3 & 4, 1991, by Kenneth I. Swartz.
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CHAPTER 4

The Bottom Line

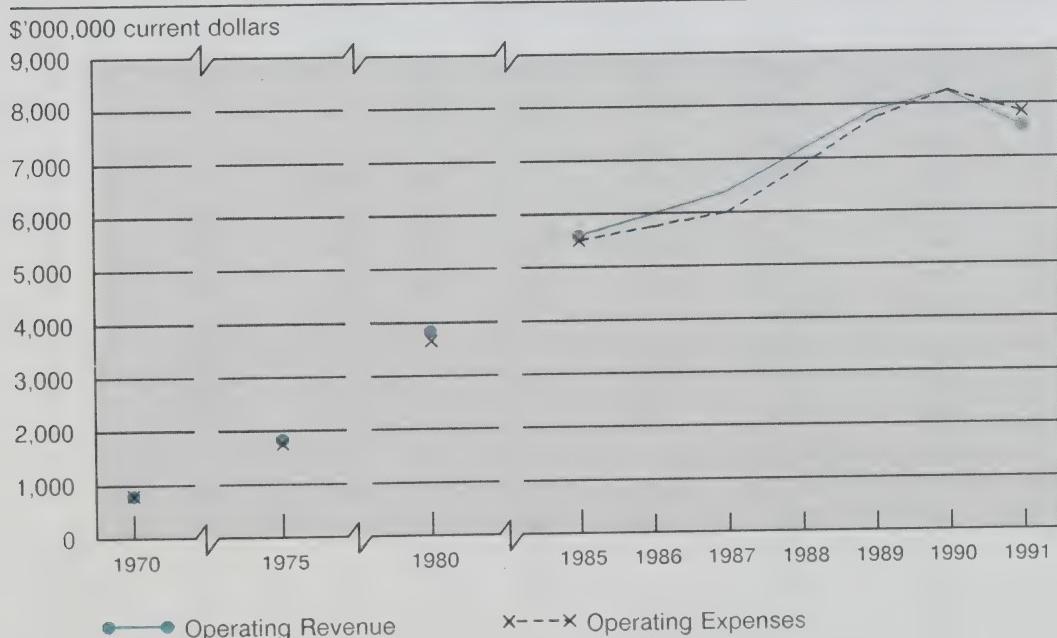


The Bottom Line

As seen in the previous chapter, the air transport industry enjoyed a fairly steady growth from 1955 to date. The overall financial performance of the aviation industry corresponding to this operational growth was affected by changes in the structure of the industry, changes in regulatory control, technological advances, productivity improvements and by changes in price levels or inflation. This chapter presents the financial picture associated with Canadian commercial aviation operations.

Total operating revenues generated by the carriers amounted to approximately \$153 million in 1955 (see Table 4.1). They increased regularly during the next three and a half decades (see Figure 4.1). Of the \$7.6 billion in total operating revenues in 1991, fixed-wing operators earned the largest proportion, whereas helicopter operators reported a relatively small 4%. From 1971 to 1991, the operating revenues of the helicopter industry increased from \$37 million to \$305 million.

Figure 4.1
Operating Revenue and Expenses, Current Dollars,
1970, 1975, 1980, 1985-1991



Note: Levels I-IV.
Sources: Statistics Canada: Catalogue No. 51-206 and Internal Reports.

Table 4.1

Financial Statements, Selected Components, 1955-1992

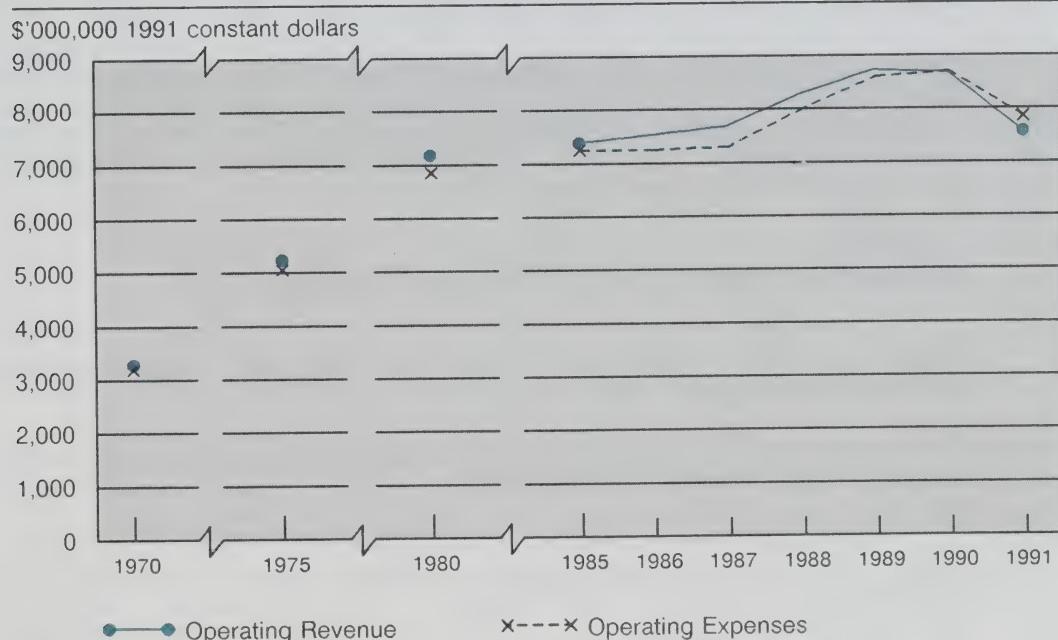
Year	Operating Revenue	Operating Expenses	Total Net Non-operating Income	Net Income (loss)	Total Assets	Interest Expenses	Return on Investment	High Prime Interest Rate
	(\$'000,000 in current dollars)							%
1955	153	147	(1)	4	123	2	4.6	4.5
1956	181	172	(1)	5	143	2	4.8	5.5
1957	190	190	(1)	(1)	181	3	1.8	5.8
1958	202	200	(3)	(2)	232	4	1.1	5.5
1959	220	220	(3)	(3)	262	5	0.8	5.8
1960	236	238	(4)	(7)	335	9	0.8	5.8
1961	255	257	(10)	(13)	366	12	-0.4	5.8
1962	285	277	(12)	(5)	364	13	2.3	6.0
1963	309	294	(13)	1	364	14	4.3	5.8
1964	335	316	(10)	8	371	15	6.4	5.8
1965	393	368	(10)	13	397	15	7.1	6.0
1966	461	431	(9)	14	449	15	6.5	6.0
1967	545	517	(11)	10	571	19	5.1	6.0
1968	616	576	(16)	12	742	26	5.1	7.3
1969	701	667	(24)	2	968	37	4.1	8.5
1970	816	784	(31)	(1)	1,125	48	4.2	8.5
1971	884	827	(37)	11	1,229	49	4.9	7.0
1972	1,018	941	(36)	21	1,326	47	5.2	6.0
1973	1,214	1,134	(41)	23	1,615	61	5.2	9.5
1974	1,553	1,482	(69)	3	2,001	91	4.7	11.5
1975	1,833	1,767	(90)	(9)	2,189	108	5.3	10.5
1976	1,991	1,936	(90)	(16)	2,032	120	6.7	10.3
1977	2,279	2,135	(73)	39	2,152	104	6.7	9.3
1978	2,586	2,424	2	97	2,677	97	7.2	11.5
1979	3,132	2,971	6	91	3,226	117	6.5	15.0
1980	3,840	3,657	(7)	106	3,763	139	6.5	18.3
1981	4,580	4,432	(64)	39	4,506	210	5.5	22.8
1982	4,613	4,635	(112)	(89)	4,761	226	2.9	18.3
1983	4,611	4,551	(88)	(17)	5,215	201	3.5	12.0
1984	5,027	4,873	(75)	75	5,568	216	5.2	13.5
1985	5,621	5,520	(123)	4	5,942	236	4.0	11.8
1986	5,981	5,738	(142)	88	6,929	270	5.2	13.0
1987	6,386	6,025	(101)	169	6,960	228	5.7	10.0
1988	7,137	6,873	(85)	121	8,002	275	4.9	12.3
1989	7,886	7,768	(58)	62	8,904	330	4.4	13.5
1990	8,240	8,235	(166)	(122)	9,116	351	2.5	14.8
1991	7,594	7,844	(342)	(426)	8,749	386	-0.5	12.3
1992 ^p	7,654	8,047	..	(843)	..	..	..	..

Note: Return on Investment percentages are based on more complete figures. Levels I-IV.
 Sources: Statistics Canada: Catalogue Nos. 51-002, 51-202, 51-206 and Internal Reports.

Total operating expenses from 1955 to 1991 followed a growth curve similar to, but greater than, operating revenues. From the \$147 million recorded in 1955, operating expenses increased to \$7.8 billion in 1991.

Adjusting for inflation, from 1970 to 1975, operating revenues and operating expenses both showed an increase of 58% (in 1991 constant dollars). Constant dollar operating revenues were over \$7 billion and operating expenses were just under \$7 billion in 1980, but constant dollar revenues increased by 5% while constant dollar expenses increased by 14% this amount in 1991 (see Figure 4.2). Compared to the yearly increases in the rate of inflation, both operating revenue and operating expenses increased at a rate above inflation.

Figure 4.2
Operating Revenue and Expenses in 1991 Constant Dollars,
1970, 1975, 1980, 1985-1991



Note: Levels I-IV.

Sources: Statistics Canada: Catalogue No. 51-206 and Internal Reports.

The industries' current dollar operating revenues covered operating expenses in all but four years (1960, 1961, 1982 and 1991). The industry recorded its first net losses from 1957 to 1962. Then from 1962 to 1966, operating revenues showed a steady upward growth that was consistently larger than the growth in operating expenses. However, over the next 20 years, there were exceptions to this pattern. During three periods, 1973 to 1976, 1979 to 1982 and 1988 to 1991, operating expenses increased faster than operating revenues. During these years, the cost of fuel increased significantly. As Canada and the world experienced an economic slowdown in 1982, financial results stagnated from the previous year (see Table 4.1). The net loss in this year amounted to approximately \$89 million. However, the industry again returned to profitability by 1984 with a recorded net income, but the slowdown was repeated several years later. From 1987 until 1990, operating incomes declined constantly to an operating loss of \$426 million in 1991. These declines resulted in operating revenues covering operating expenses by a smaller and smaller margin (see Figure 4.1).

These years, however, were not the only years in which the air transport industry incurred losses. Indeed, the industry showed annual net losses on 13 occasions from 1955 to 1991, largely due to non-operating expenses¹¹ (see Table 4.1).

The increase in net capital gains from 1985 to 1989, in part, helped to achieve the net income declared in those years. Capital gains escalated by an amazing 96% to \$155 million between 1987 and 1988 and then jumped another 61% to \$250 million in the next year. These gains partially resulted from the sale of aircraft as part of the airlines' fleet renewal programs.

Similarly, high interest rates, which began around 1974, are reflected in the interest expenses paid by the industry as part of non-operating expenses (see Table 4.1). When interest rates are high, carriers sometimes added capacity through leased, rather than owned, flight equipment, particularly when there was a tax incentive to do so. This was most easily observed in 1982, when the value of leased operating equipment was more than a quarter of the value of owned operating equipment and interest rates had just begun to lower from over 20% in the previous year.

Overall, the airline industry's revenues grew over the past thirty years. Following the 1981-1983 downswing, industry performance again resumed its upward trend and by 1984 operating revenues increased 9% over 1983. This resulted in an operating income of \$75 million. Operating revenues totalled \$8 billion in 1991, a 66% increase over 1981 and a 759% increase over 1971.

A Look at Operating Revenue Dollar

Another perspective on the industry can be gained by examining how the operating revenue dollar was spent.

The two most costly expense areas of an airline business were aircraft operations¹² and general services and administration¹³.

Of these two, general services and administration expenses was the larger. For example, 37 cents of each operating revenue dollar were spent on general services and administration at its lowest in 1965, compared to approximately 47 cents in 1991. This trend was partly due to the increased need for airlines to administer the areas that were regulated by the government prior to 1988¹⁴ (see Figure 4.3). Expenses related to aircraft operations also increased substantially, from just under a quarter of each operating revenue dollar at its lowest in 1965, to about 35 cents in 1991.

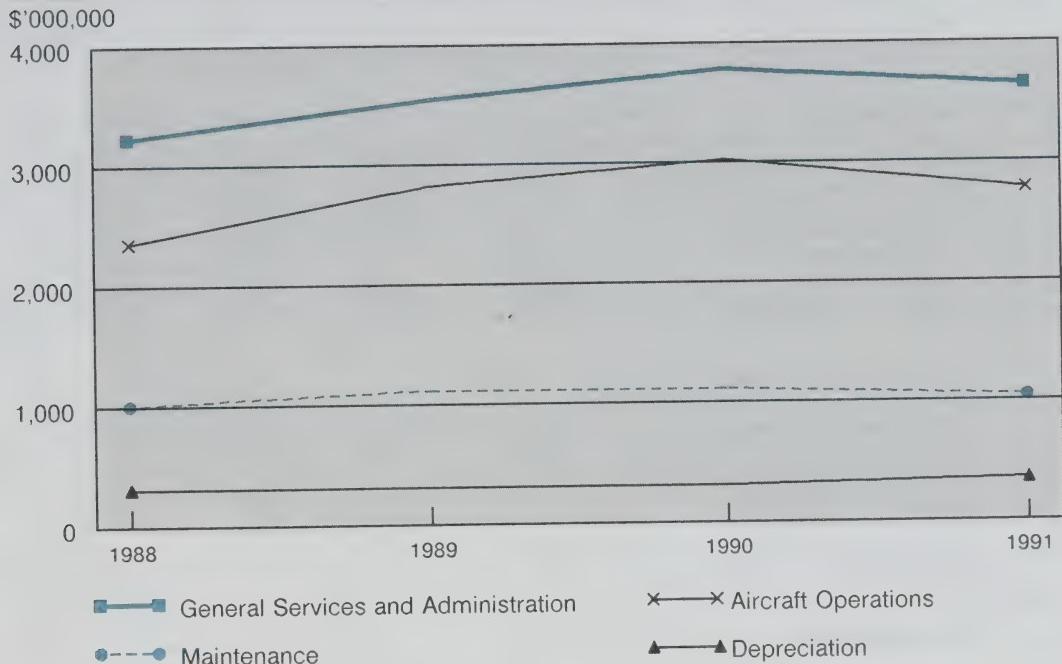
¹¹ Non-operating income and expenses do not vary directly with the amount of flying done. Non-operating income can be, for example, capital gains from the sale of aircraft, interest income and foreign exchange adjustment. Non-operating expenses can include capital losses and interest on bank loans and other debt.

¹² Aircraft operations included expenses for flight crew salaries and wages, aircraft fuel and oil, landing and navigation fees, aircraft insurance, aircraft rentals and other expenses.

¹³ General services and administration included wages and salaries and supplementary labour income for administrative employees, property taxes, building rentals, communications purchased and other purchases.

¹⁴ Under regulation, the government administered routes by determining which airlines could service a particular route and the type of aircraft they could use in this service. Since deregulation, the air carriers adjust their capacity on a particular route according to the market forces.

Figure 4.3
Operating Expenses, 1988-1991



Note: Levels I-IV.

Sources: Statistics Canada: Catalogue No. 51-206 and Internal Reports.

The increases in these relative shares were offset, to a large degree, by reductions in the relative share spent on maintenance. This was made possible without compromising safety because the airlines' modernized fleet required less maintenance and because some airlines contracted out this work at a cheaper rate than in-house maintenance.(2) From a quarter of every operating revenue dollar at its highest point in 1960, the share of the operating dollar spent on maintenance dropped to approximately 13 cents in 1991.

The decreases in the percentage of depreciation expenditure to operating revenue also helped to maintain operating expenses at the same general level as operating revenue over the years (see Figure 4.3). Depreciation reductions were also partially due to the fleet renewal programs.

Financial Performance of the Major Carriers and Their Affiliates

The major carriers, Air Canada and Canadian Airlines International Limited, created affiliates (see Figure 2.2) for their domestic service operations in the period since 1988. Small volume and short-haul routes were passed to their family of carriers, allowing the major carriers to concentrate on the longer haul routes. The effect of the resulting hub and spoke system was apparent when examining the revenues and expenses of the majors and their affiliates from 1988 to 1991 (see Table 4.2).

Table 4.2

Revenues and Expenses for Air Canada, Canadian Airlines and Their Affiliate Networks, 1988-1992

Year	1988	1989	1990	1991	1992 ^p
(\$'000,000)					
Air Canada					
Total Operating Revenue	2,849.1	3,081.6	3,238.2	2,741.9	2,702.1
Scheduled Passenger Revenue	2,349.1	2,550.6	2,670.9	2,280.6	2,244.9
Total Direct Flying Expenses	1,541.1	1,685.8	1,876.7	1,673.1	..
Aircraft Operations	799.6	902.0	1,029.0	880.0	..
Aircraft Rental	54.3	97.2	106.5	110.6	..
Fuel & Oil	449.8	485.6	569.9	433.3	..
Total Operating Expenses	2,706.0	2,972.1	3,279.5	2,947.6	2,911.6
Air Canada Connectors					
Total Operating Revenue	252.5	366.2	488.5	492.0	577.8
Scheduled Passenger Revenue	201.5	330.2	444.1	452.9	484.0
Total Direct Flying Expenses	..	..	..	..	..
Aircraft Operations	90.7	136.5	173.8	166.4	..
Aircraft Rental	..	..	..	..	..
Fuel & Oil	40.0	56.0	72.2	63.2	..
Total Operating Expenses	237.7	327.8	427.9	430.7	511.2
Canadian Airlines					
Total Operating Revenue	2,136.1	2,118.0	2,543.9	2,445.3	2,441.5
Scheduled Passenger Revenue	1,712.0	1,674.3	2,115.6	2,037.9	2,061.0
Total Direct Flying Expenses	1,189.9	1,716.2	1,876.7	1,497.6	..
Aircraft Operations	667.1	712.3	886.8	849.1	..
Aircraft Rental	125.3	248.1	178.0	209.6	..
Fuel & Oil	351.8	338.8	475.5	396.1	..
Total Operating Expenses	2,097.8	2,179.9	2,608.2	2,594.1	2,752.0
Canadian Partners					
Total Operating Revenue	297.1	387.3	295.4	375.0	401.1
Scheduled Passenger Revenue	234.7	314.6	272.7	343.3	352.5
Total Direct Flying Expenses	..	..	..	..	..
Aircraft Operations	123.2	157.3	120.4	156.2	..
Aircraft Rental	..	..	..	..	..
Fuel & Oil	47.2	60.5	47.3	57.0	..
Total Operating Expenses	276.0	374.8	290.7	381.4	409.8

Note: Carriers who did not report for the whole year were:

Air Canada Connectors: Air Toronto, first three quarters of 1991.

Canadian Partners: Air Toronto, fourth quarter of 1991;

Inter-Canadian: third and fourth quarters of 1991;

Canadian Frontier: third and fourth quarters of 1990 and all 1991.

Sources: Statistics Canada: Catalogue No. 51-206 and Internal Reports.

The financial performance for the four groups, to a large degree, represented their performance on scheduled services. Over 80% of Air Canada's and Canadian Airlines' total operating revenue resulted from carrying scheduled passengers in each of the four years shown. Similarly, scheduled passenger revenue assumed a greater proportion of total operating revenue for the two groups of affiliates, increasing from about 80% to over 90% between 1988 and 1991.

The operating income of the four groups, however, was negatively affected by generally increasing total operating expenses during this period. Many events affected operating income. Fuel was expensive during this period and market share competition was strong. Wardair added new aircraft to its fleet in order to compete with Air Canada and Canadian Airlines in the high-density scheduled market in 1988. Although Wardair was purchased by Canadian during 1989, the annual operating income for the four groups continued to be affected by strong competition, as well as by the lower overall market for air travel. This was followed by the beginning of the recession.

The exception to the increases in operating expenses occurred in 1991, when total operating expenditures dropped in both major carriers. Carriers flew less in this year as was reflected in the number of passenger-kilometres which dropped in all groups except the Canadian partners (see Table 2.3). The decrease in operating expenditures occurred as the air carriers attempted to combat the global economic decline by reducing costs wherever possible. Frequently, this included laying off employees, taking aircraft out of service, centralizing or closing functions and facilities, and rationalizing domestic and international routes. The increase in total operating expenditures by the Canadian partners occurred because Canadian Frontier and Inter-Canadien were added to their family.

Direct flying expenses¹⁵ constituted well over half of total operating expenditures for each of Air Canada and Canadian Airlines from 1988 to 1991. Aircraft operations, the largest contributor to direct flying expenses, generally comprised more than a quarter of Air Canada's total operating expenses and about a third of Canadian Airlines' total operating expenses.

The largest increase in aircraft operations occurred in aircraft rentals in 1989 over 1988 for the parent carriers. This represented both a larger use of, and greater cost of leased equipment. Aircraft fuel and oil, also an aircraft operation expense, showed mixed results in the four groups of carriers. The four groups generally showed increases in fuel and oil expense until 1990 with a decline in 1991. The large increase in this expense in the two families by comparison to that of their parents, was explained by the large increase in the number of passenger-kilometres they flew on their feeder routes (see Table 2.3).

A Counting We Will Go

Financial ratios are a good way to measure the economic strength of an industry, and in this case, the airline industry. The Income Statement shows the current financial health while the Balance Sheet indicates long-term financial achievement. Ratios are also used to compare the performance of individual carriers, to locate the efficiency of a particular carrier within the industry, and to measure the results of one industry against another or of the Canadian aviation industry to another country.

¹⁵ Direct flying expenses included aircraft operations, maintenance on flight equipment and in-flight service expenses.

The operating ratio¹⁶ and current ratio¹⁷ display the carrier's ability to meet its short-term obligations. Operating ratios greater than one, indicate that the industry experienced an operating loss, as was the case in 1991 (see Figure 4.4). Canadian aviation had an operating ratio equal to one in the recessionary years of 1982 and 1990 and generated operating income in all other years. The rising cost of fuel and employment coupled with lower load factors helped to explain the decreases in operating income.

The liquidity of the industry, as measured by the current ratio, showed an overall decline over the years (see Figure 4.4). However, the downward trend was broken between 1985 and 1988 with increased ratios from 0.81 to 1.29, respectively. The subsequent movement of the current ratio from its level in 1988 to 0.94 in 1991 was heavily influenced by the current liabilities for the industry. As an example, large numbers of prepaid but unused airline tickets (prepayment was generally a condition on discounted fares) are a current liability until the flight date, which will significantly affect this ratio. Overall, aviation in Canada is still generating a positive net worth (total assets minus total liabilities).

Retained earnings for the industry is the sum of all net profits or losses earned since its inception after dividends have been paid. An equivalent term is earned surplus. As of 1991, retained earnings amounted to -\$24.6 million.

The extent to which borrowed funds were used in aviation was reflected in leverage ratios. The debt to asset ratio¹⁸ of 0.75, for example, showed that every dollar of assets was financed with \$0.75 cents of debt. Such a highly leveraged industry is most efficient during growth years when profits can both pay off interest charges and more. This ratio climbed to an even higher 0.83 in 1991, concurrent with the beginning of problems by the industry in acquiring finances (see Figure 4.4). Highly leveraged airlines run the risk of large losses during a recession but also have a chance of gaining high profits when the industry is growing. Owners may prefer high leverage either to magnify earnings or because raising new equity means giving up some degree of control. Fleet renewal programs and mergers and acquisitions within the industry partially explain the increase in the use of debt since 1987.

The aviation industry's earning power is reflected in the profitability ratios of profit margin, return on investment and return on assets. The 0.026% profit margin¹⁹ of 1987, for example, shows that every dollar of service sold earned 0.026 cents of profit for the industry (see Figure 4.4). The results for 1991 reflected a major downturn in demand coupled with sharply increased costs.

Return on assets²⁰ was perhaps the best long term measure of the operating efficiency of an enterprise. It is used to evaluate the proceeds gained on all the assets entrusted to management. If interest is removed from this computation, it is possible for an investor to compare the return on investment²¹ in the airline industry to, for example, the interest rates of a bank deposit (see Table 4.1) or some other investment to determine the best return. As interest expense is income tax deductible to the airline, financing with debt is efficient to the carrier, providing it costs less than financing with equity. Since the high point reached in 1987, both return on investment (see Figure 4.4) and return on assets (see Figure 4.4) showed declining profitability within the aviation industry.

¹⁶ The operating ratio is operating expenses divided by operating revenue.

¹⁷ The current ratio is current assets divided by current liabilities.

¹⁸ The debt to asset ratio is total liabilities divided by total assets.

¹⁹ Profit margin is net income divided by operating revenue.

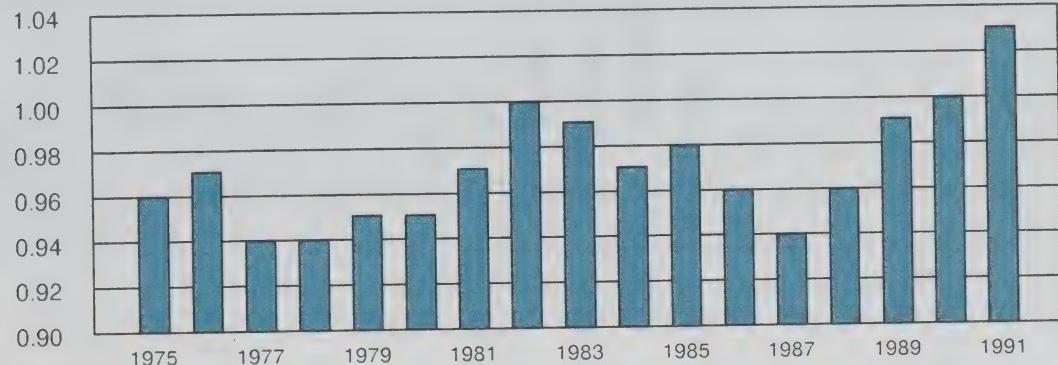
²⁰ Return on assets is net income divided by total assets.

²¹ Return on investment is the sum of net income and interest expenses divided by total assets.

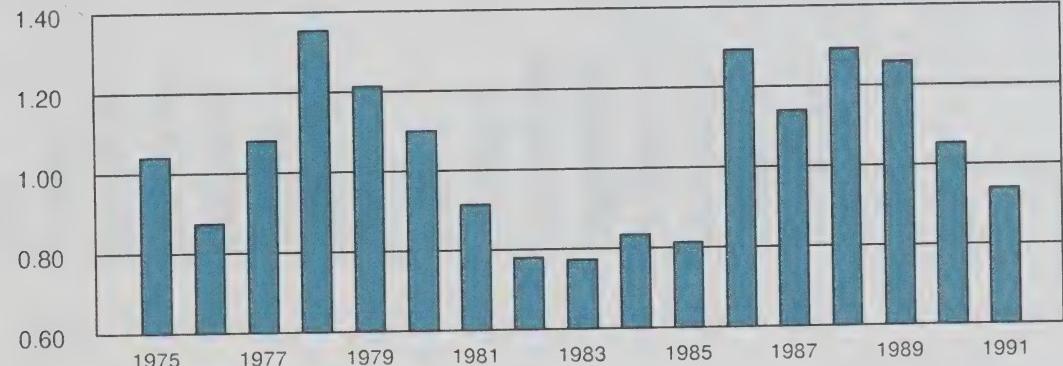
Figure 4.4
Financial and Profitability Ratios, 1975-1991

Financial Ratios

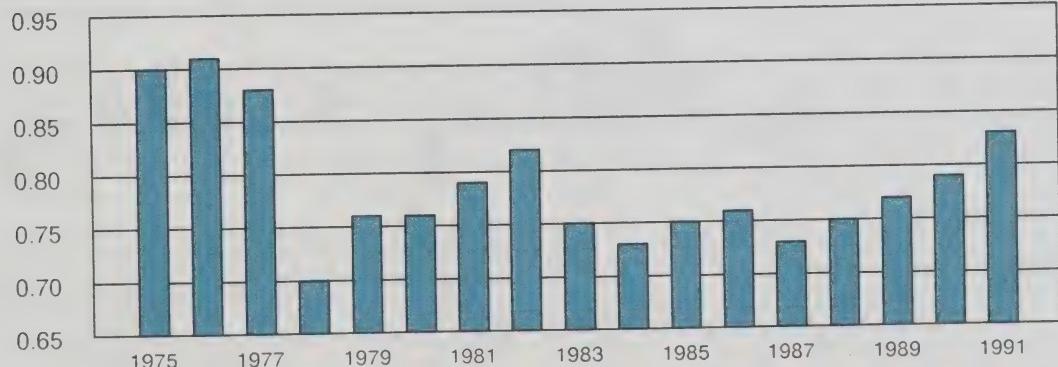
Operating Ratio



Current Ratio



Debt/Asset Ratio

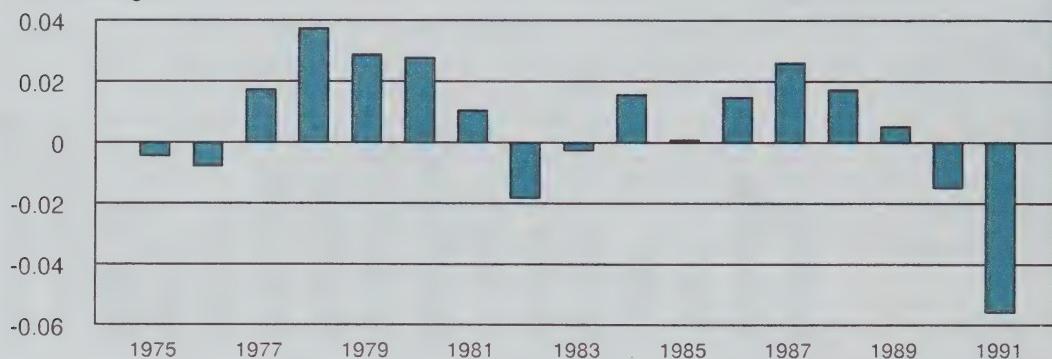


Note: From 1975-1984, Levels I-V;
 1985-1991, Levels I-IV.
Source: Statistics Canada: Catalogue No. 51-206.

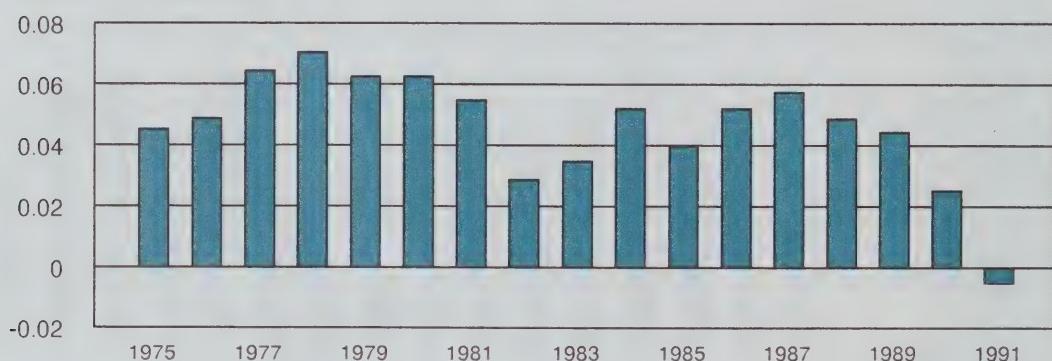
Figure 4.4
Financial and Profitability Ratios, 1975-1991 – Concluded

Profitability Ratios

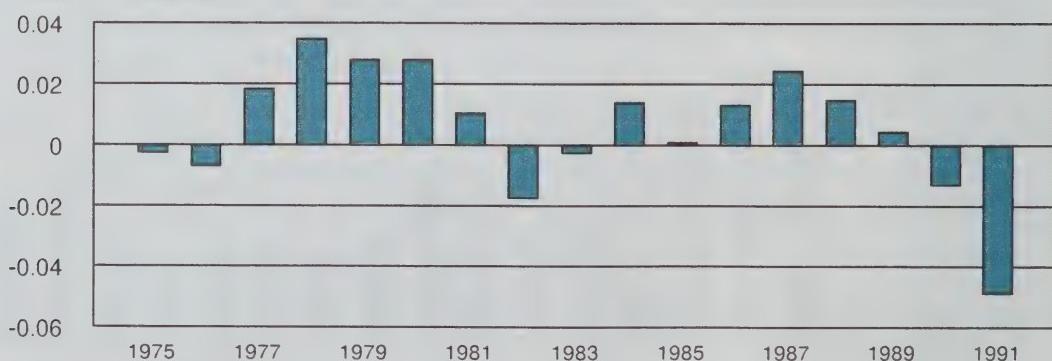
Profit Margin



Return on Investment



Return on Assets



Note: From 1975-1984, Levels I-V;
 1985-1991, Levels I-IV.

Source: Statistics Canada: Catalogue No. 51-206.

Fuelling the Industry: Aviation is a Gas

Fuel costs, which included both kerosene for turbines and gasoline expenses, were an important part of the budget for Canadian air carriers. However, while they figured very high in the 1980s and 1990s, fuel costs were less prominent in earlier years. They accounted for 15% of all operating expenses in 1955, for example and about 11% in 1965. Fuel, however, comprised nearly one quarter of all operating costs in 1981 at the beginning of the OPEC crisis years, dropping to just over 15% in 1991 (see Table 4.3).

May 5-6, 1919 – The first transborder commercial flight occurred when Ervin E. Ballough bought a Curtiss JN-4(Can.) in Toronto for L. Bamberger & Co. and flew 150 lbs of raw furs to Elizabeth, New Jersey via Thousand Islands and Watertown, New York. (4)

The 1955 percentage, while fairly high, started to drop in about 1958. This trend can be explained by the evolution from piston to jet engines which entailed, among other things, a change from gasoline to the much cheaper turbo fuel.

The average price of fuel was less than four cents a litre from 1961 to 1970. The oil crisis of the 1970s and the resulting adjustment of Canadian oil prices, however, soon brought the price up.

The world price of oil increased drastically in 1981 and had significant consequences on the cost of airline fuel. At its highest point, the average price of Canadian fuel reached just over 36 cents a litre in 1982, compared to under 14 cents a litre just five years earlier. The industry would have saved well over \$7 billion if the 1978 Canadian fuel costs per litre had been preserved until 1991. Fuel costs increased in every year since 1968 except for four years (1983, 1986, 1987 and 1991).

Price increases precipitated many airlines to reduce their fuel costs. This was accomplished by reducing their hours flown, by rationalizing their unprofitable routes, by implementing fleet renewal programs and by negotiating price reductions with the suppliers of fuel. Pilots began cruising at more efficient altitudes, using 'straight in' landing approaches and taxiing with one engine shut down. Carriers focused on schedules which were revised to maximize the number of passengers and tonnes of freight carried. In order to fill empty seats, the air carriers responded with seat sales and other special rates to increase their load factors. Carriers also took advantage of developments in the manufacturing of aircraft engines, installing new models that were quieter and more fuel-efficient.

Average Canadian fuel prices moderated to 25 cents a litre by 1988. They began increasing again in the years leading to the second recession and in 1991, the price of fuel averaged nearly 29 cents a litre. To help offset the cost of fuel, in this year the government introduced a two-year partial rebate of the federal excise tax on aviation fuel.

January 24, 1920 – The first Canadian private pilot's licence was issued to James Stanley Scott of Ottawa.

July 31, 1920 – The first Canadian commercial pilot's licence was issued to Roland J. Groome of Regina. (4)

There were dramatic increases in fuel costs in 1974, 1980 and 1981. In most years, increases in fuel costs were higher than the rate of inflation. In general, of the years which saw total operating costs increase faster than the rate of inflation, the cost of fuel was the major cause.

Increases in tonne-kilometres flown per litre of fuel occurred in most years. This indicated that the industry was able to protect itself partially from the effects of fuel price increases through technological and productivity increases.

Table 4.3

Fuel Consumption, Fuel Costs and Tonne-Kilometres Flown Per Litre of Fuel Consumed, 1955-1991

Year	Fuel Consumed Litres ('000 000)	Fuel Costs (\$'000,000)	Fuel Cost per Litre Cents	Fuel Cost as % of Operating Expenses	Tonne- kilometres Flown per Litre of Fuel Consumed	Fuel Costs Constant \$ 1991=100 (\$'000,000)	Fuel Costs/ Litre Constant \$ 1991=100
1955	296	22	7.4	15.0	0.74	129.4	43.5
1956	378	28	7.3	15.8	0.69	161.8	42.2
1957	430	29	6.8	15.5	0.71	162.9	38.2
1958	482	28	5.8	13.9	0.73	153.0	31.7
1959	554	29	5.2	13.2	0.73	156.8	28.1
1960	634	30	4.7	12.6	0.77	159.6	25.0
1961	796	31	3.9	12.0	0.68	164.0	20.6
1962	870	32	3.7	11.5	0.68	166.7	19.3
1963	943	35	3.7	11.9	0.67	179.5	19.0
1964	991	36	3.7	11.5	0.71	180.9	18.6
1965	1 134	41	3.6	11.0	0.87	201.0	17.6
1966	1 332	47	3.5	10.9	0.76	222.7	16.6
1967	1 584	54	3.4	10.5	0.78	246.6	15.5
1968	1 808	65	3.6	11.3	0.78	286.3	15.9
1969	2 016	78	3.9	11.7	0.77	327.7	16.4
1970	2 320	88	3.8	10.8	0.94	357.7	15.4
1971	2 363	94	4.0	10.9	0.95	371.5	15.8
1972	2 566	108	4.2	11.0	1.02	407.5	15.8
1973	2 917	140	4.8	12.0	1.05	491.2	16.8
1974	3 243	251	7.7	16.5	1.04	794.3	24.4
1975	3 425	331	9.7	18.1	1.06	945.7	27.7
1976	3 374	362	10.7	18.1	1.11	962.8	28.5
1977	3 367	412	12.2	18.6	1.19	1,014.8	30.0
1978	3 454	471	13.6	18.7	1.24	1,063.2	30.7
1979	3 871	611	15.8	19.8	1.29	1,265.0	32.7
1980	3 946	843	21.4	22.2	1.32	1,584.6	40.2
1981	3 852	1,136	29.5	25.3	1.45	1,899.7	49.3
1982	3 271	1,179	36.1	25.1	1.66	1,778.3	54.4
1983	3 384	1,113	32.9	24.2	1.60	1,587.7	46.9
1984	3 510	1,128	32.2	22.9	1.54	1,541.0	44.0
1985	3 823	1,283	33.6	23.2	1.48	1,685.9	44.2
1986	4 032	1,131	28.1	19.7	..	1,428.0	35.5
1987	4 053	1,058	26.1	17.6	..	1,279.3	31.6
1988	4 540	1,133	25.0	16.5	1.76	1,315.9	29.0
1989	4 724	1,202	25.4	15.5	1.80	1,331.1	28.1
1990	4 710	1,438	30.5	17.2	1.83	1,518.5	32.2
1991	4 148	1,187	28.6	15.1	1.80	1,187.0	28.6

Note: From 1955-1980, Levels I-IV;
 1981-1987, Levels I-III;
 1988-1992, Levels I-IV.

Fuel cost percentages are based on more complete figures.

Sources: Statistics Canada: Catalogue Nos. 51-002, 51-202 and Internal Reports.

Overall, productivity in the industry increased as one litre of fuel in the early years (1955) carried on average 0.7 tonne-kilometre but in the later years (1991) carried on average 1.8 tonne-kilometres.

Employment Within the Industry

Another major component of airline costs is employment. Employment expenses are influenced by the length and terms of the labour contracts. Over a quarter of the operating expenses of Canadian carriers was salary and wages in 1991. This still represented a decrease from the 31% of operating expenses in 1980 and the 38% in 1970 and resulted from the carriers' need to reduce their costs in order to remain competitive (see Tables 4.1 and 4.4). This percentage was also lower than that of 1960 when over 40% of expenditures went to salaries and wages.

The 1990 percentage can be partly explained by the reduction in personnel and the negotiation of more modest contract settlements which paralleled the industry downturn. But it can also be explained by rising fuel costs which reduced the proportion of labour costs to total costs.

Nonetheless, the overall picture was one of growth in personnel. The number of employees working for air carriers doubled from 1955 to 1968, tripled to 1978, and reached four times the 1955 level in 1991. Meanwhile, total salaries increased almost four-fold by 1968, almost 15 times by 1978 and about 40 times the 1955 level by 1991 (see Table 4.4).

The strong upsurge in the number of employees, from 1960 to 1970, reflected the rallying of the industry. Similarly, the drop in employees from 1980 to 1983 reflected the economic situation of the country and the overall industry performance. This situation was repeated in 1991, aggravated by the competitive nature of the industry. In both decades, lay-offs were supplemented by early retirement offers, some salary cuts, job sharing opportunities and other attempts, both voluntary and involuntary, to reduce employment expenses.

The number of unionized aviation employees also dropped in the late 1980s. The number of employees went from about 38 thousand in 1985, 35 thousand in 1986, 36 thousand in 1987 and 1988, to 34 thousand in 1989. (3)

Over the years, the operating revenue per employee increased substantially, going from \$12 thousand per employee in 1955 to \$142 thousand per employee in 1991. This employee productivity measure²² showed steady increments on a year over year basis from 1955 to 1991, except in 1957, 1988 and 1991.

Another yardstick used to measure productivity within the industry was tonne-kilometres flown per employee. According to this measure, productivity increased eight times between 1955 and 1991. Again, productivity consistently bettered the previous year level (except for five years) (see Table 4.4 and Figure 4.5). Over the same period, average wages increased by a factor of ten, from \$4,120 per annum in 1955 to \$41,503 in 1991 (see Table 4.4 and Figure 4.6).

²² The productivity of employees is measured by operating revenue divided by the number of employees or can be measured by total tonne-kilometres flown divided by the number of employees.

Table 4.4

Employees, Salaries, Productivity for Canadian Commercial Air Carriers, 1955-1991

Year	Number of Employees	Total Salaries & Wages Paid (\$'000,000)	Average Salaries & Wages per Year \$	Operating Revenue per Employee \$	Labour Cost as % of Operating Expenses	Tonne-kilometres Flown per Employee	Average Salaries & Wages Constant \$ 1991 = 100 (\$'000,000)
1955	13,271	55	4,120	11,509	37.3	16 819	24,235
1956	14,848	65	4,378	12,269	37.2	18 488	25,306
1957	16,014	74	4,618	11,870	39.0	19 925	25,944
1958	15,990	80	4,999	12,615	39.9	23 100	27,317
1959	16,565	87	5,250	13,307	39.6	25 794	28,378
1960	17,106	96	5,550	13,795	40.2	28 521	29,521
1961	17,700	102	5,771	14,399	39.7	32 100	30,534
1962	17,810	106	5,931	15,981	38.1	35 345	30,891
1963	17,577	109	6,175	17,570	36.9	38 241	31,667
1964	17,795	116	6,543	18,612	36.9	47 194	32,879
1965	19,007	130	6,826	20,709	35.2	51 740	33,461
1966	21,440	151	7,049	21,481	35.0	53 132	33,408
1967	24,686	187	7,571	22,021	36.2	55 628	34,571
1968	26,550	215	8,084	23,216	37.2	60 142	35,612
1969	28,625	245	8,574	24,547	36.8	64 431	36,025
1970	30,698	301	9,796	26,575	38.4	71 203	39,821
1971	29,622	304	10,270	29,856	36.7	75 574	40,593
1972	31,480	345	10,967	32,330	36.7	82 888	41,385
1973	34,061	413	12,135	35,644	36.5	89 472	42,579
1974	38,874	512	13,162	39,940	34.5	87 057	41,652
1975	40,321	604	14,972	45,465	34.2	90 114	42,777
1976	39,950	670	16,770	49,846	34.6	93 964	44,601
1977	39,466	794	18,746	57,748	34.7	101 596	46,172
1978	40,167	792	19,721	64,374	32.7	106 936	44,517
1979	43,336	951	21,954	72,265	32.0	114 944	45,453
1980	47,676	1,125	23,591	80,546	30.8	109 027	44,344
1981	47,534	1,279	26,898	93,277	29.8	117 599	44,980
1982	45,707	1,373	30,037	97,729	30.6	118 544	45,305
1983	42,093	1,371	32,568	105,809	31.2	128 229	46,459
1984	42,282	1,432	33,867	114,568	30.5	127 956	46,266
1985	43,330	1,527	35,241	124,519	28.8	133 693	46,309
1986	45,489	1,631	35,855	127,793	29.3	..	45,271
1987	46,356	1,665	35,918	134,036	28.4	..	43,431
1988	52,625	1,911	36,311	130,613	27.8	166 247	42,173
1989	55,891	2,142	38,321	140,229	27.7	168 055	42,437
1990	56,331	2,259	40,105	146,134	27.4	149 680	42,350
1991	53,495	2,220	41,503	142,096	28.3	138 804	41,503

Note: Labour cost percentages are based on more complete figures.

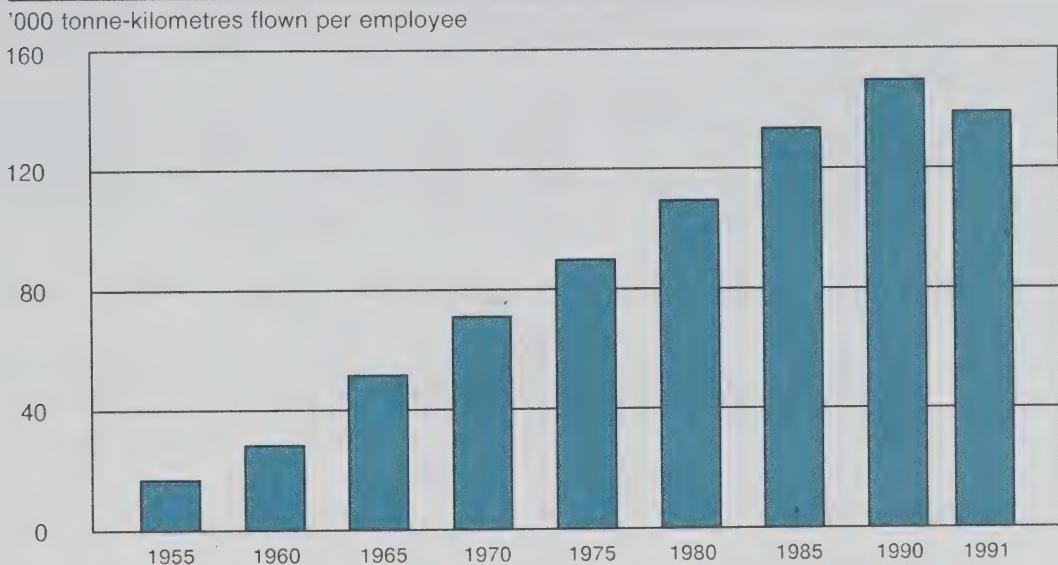
From 1955-80, Levels I-IV;

1981-87, Levels I-III;

1988-91, Levels I-IV.

Sources: Statistics Canada: Catalogue Nos. 51-002 and 51-202.

Figure 4.5
**Labour Productivity, 1955, 1960, 1965, 1970, 1975, 1980,
 1985, 1990, 1991**



Note: From 1955-1980, Levels I-IV; 1981-1987, Levels I-III; 1988-1991, Levels I-IV.

Sources: Statistics Canada: Catalogue Nos. 51-002, 51-202, and Internal Reports.

The average wages, adjusted for inflation in 1991, were slightly lower than the 1974 level. In general, increases in average salaries were greater than those of inflation. This was not unusual since labour contracts often included a cost of living clause. Three annual declines in passenger-kilometres, from 1981 to 1983, resulted in large increases in constant dollar employment costs per tonne-kilometre in these years. This showed the time lag in adjusting personnel to changed requirements in the industry.

Employment Within The Major Carriers and Their Families

The number of employees for the two major carriers showed very different pictures between 1988 and 1991 (see Table 4.5). Air Canada's total employment dropped 7% while Canadian Airlines had a significant 22% increase largely because of their acquisition of Wardair in 1989. Salaries and wages, on the other hand, increased 4% for Air Canada and ten times that amount or 39% for Canadian Airlines from 1988 to 1991.

Employment and salary and wages increased among the two families to an even greater degree than for their parent companies. Total employment of the Air Canada connectors showed a 37% growth while total compensation grew 76%. The Canadian Airlines partners increased by 21% in employment and by 30% in their remunerations. This expansion reflected the shift of routes from the parent to the carriers in the family. Not surprising, it was during this period that the major carriers focused on adding new carriers to their networks. In addition to the expansion of their networks with their parent's former routes, the family increased their demand for labour because of increased traffic during this period.

Table 4.5

Number of Employees, Salaries & Wages for Air Canada, Canadian Airlines and Their Affiliate Networks, 1988-1992

Year		1988	1989	1990	1991	1992 ^p
Air Canada						
Number of Employees	No.	21,999	22,676	22,621	20,493	19,316
Salaries & Wages	\$'000	917,246.8	991,772.2	1,081,641.8	953,360.0	934,622.3
Operating Revenue per Employee	\$'000	129.5	135.9	143.1	133.8	139.9
Passenger-Kilometres per Employee	'000	1 036.9	1 054.4	1 083.2	990.6	1 110.7
Air Canada Connectors						
Number of Employees	No.	2,190	2,463	3,002	3,008	2,789
Salaries & Wages	\$'000	58,297.1	72,874.1	87,072.4	102,600.1	100,678.3
Operating Revenue per Employee	\$'000	115.3	148.7	162.7	163.6	207.2
Passenger-Kilometres per Employee	'000	374.0	507.8	562.2	538.6	604.2
Canadian Airlines						
Number of Employees	No.	14,420	15,082	17,219	17,656	16,311
Salaries & Wages	\$'000	552,387.6	609,492.9	681,801.5	766,431.2	759,268.5
Operating Revenue per Employee	\$'000	148.1	140.4	147.7	138.5	149.7
Passenger-Kilometres per Employee	'000	1 243.0	1 161.7	1 255.8	1 052.5	1 215.0
Canadian Partners						
Number of Employees	No.	2,264	2,760	2,142	2,749	2,725
Salaries & Wages	\$'000	66,504.6	83,901.4	59,000.7	86,740.6	74,469.0
Operating Revenue per Employee	\$'000	131.2	140.3	137.9	136.4	147.2
Passenger-Kilometres per Employee	'000	370.6	417.4	478.0	403.8	503.8

Sources: Statistics Canada: Catalogue No. 51-206 and Internal Reports.

Productivity, over the four-year period, was not as great in the parent carriers as in their affiliates due to the parent's deliberate moves to build up the carriers in their family. In spite of a drop in operating revenue, passenger-kilometres flown and total employees, Air Canada showed an increase of 3% in operating revenue per employee but a decline of 4% in passenger-kilometres per employee. Canadian Airlines' comparable figures declined by 6% and 15%, respectively.

July 11, 1915 – The first pilots to be licensed in Canada were A. Strachan Ince and F. Homer Smith, who passed their tests at the Curtiss Aviation School in Toronto and were granted certificates No. 1519 and 1520 by Royal Aero Club of the United Kingdom. (4)

Both families showed marked productivity gains in employment over this four-year period. They both reported more operating revenue per employee than their parent. This occurred even though their parent reported approximately twice their number of passenger-kilometres per employee.

employee due to the longer routes and larger aircraft of the parent. From 1988 to 1991, the Canadian Airlines partners gained 4% in operating revenue per employee and 9% in passenger-kilometres per employee. Air Canada connectors increased 42% and 44%, respectively over this same period.

Table 4.6
Pilot Licences in Force in Canada, 1979-1992

Year	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Pilots: Helicopter and Airplane														
Private	39,856	40,582	41,592	41,351	40,483	39,982	38,561	36,966	35,581	34,800	33,699	32,534	29,358	31,626
Commercial	8,039	7,905	9,772	10,346	10,383	10,339	9,824	9,341	9,106	9,191	9,160	9,266	9,416	9,712
Senior Commercial	1,029	1,122	1,345	1,299	1,258	1,194	1,177	1,151	1,093	1,104	1,091	667	667	628
Airline Transport	4,485	4,969	5,765	6,051	6,209	6,241	6,345	6,504	6,755	7,035	7,293	7,520	7,900	8,786
Sub-Total	53,409	54,578	58,474	59,072	58,374	57,820	55,924	53,988	52,593	52,119	50,411	47,341	50,752	
Glider	3,321	3,604	3,894	4,250	4,526	4,670	4,701	4,730	4,850	5,001	5,124	5,143	5,271	5,494
Gyroplane	6	7	15	16	17	15	14	15	14	12	12	10	10	11
Free Balloon	51	84	85	112	132	172	199	209	220	241	267	282	271	287
Ultra-light - Private	"	"	"	"	"	"	"	"	"	1,159	1,459	1,674	1,820	1,413
- Commercial	"	"	"	"	"	"	"	"	575	672	775	827	857	704
Total Pilots	56,787	58,273	62,468	63,450	63,049	62,677	60,838	60,676	59,808	59,822	59,306	58,656	55,006	58,709
Flight Navigators	139	131	133	133	129	124	118	108	105	101	100	93	82	81
Flight Engineers	156	156	167	182	176	196	241	256	304	332	371	382	381	420
Air Traffic Controllers	1,873	1,895	1,909	1,944	1,954	1,947	1,863	1,754	1,702	1,636	1,539	1,514	1,494	1,619
Aircraft Maintenance Engineers	4,862	5,264	5,630	6,113	6,307	6,461	6,674	6,690	7,162	8,207	8,778	9,307	10,000	9,876
Licences	7,030	7,446	7,839	8,372	8,566	8,728	8,896	8,808	9,273	10,276	10,788	11,296	11,957	11,996
Total Licences	63,817	65,719	70,307	71,822	71,615	71,405	69,734	69,484	69,081	70,098	70,094	69,952	66,963	70,705
Airplane Instructors	1,457	1,547	1,728	1,740	1,565	1,490	1,361	1,203	1,253	1,262	1,263	1,248	1,334	1,502
Helicopter Instructors	97	140	135	158	120	120	83	76	86	76	79	81	93	90
Total Airplane and Helicopter Instructors	1,554	1,687	1,863	1,898	1,685	1,610	1,444	1,279	1,339	1,338	1,342	1,329	1,427	1,592

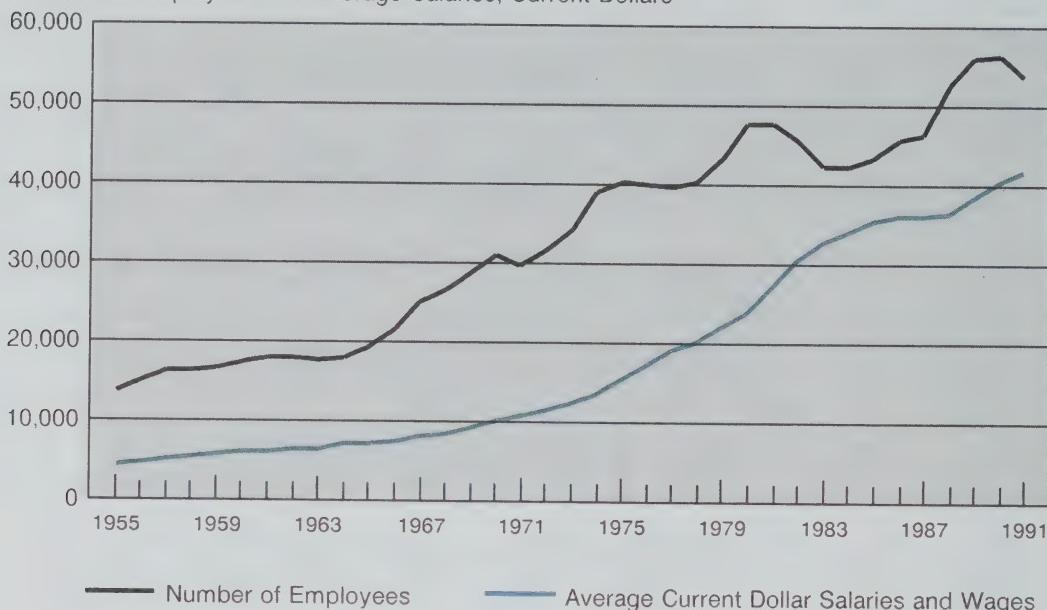
Note: Figures were as of January of each year except 1991, which was as of October.

Source: Transport Canada Files.

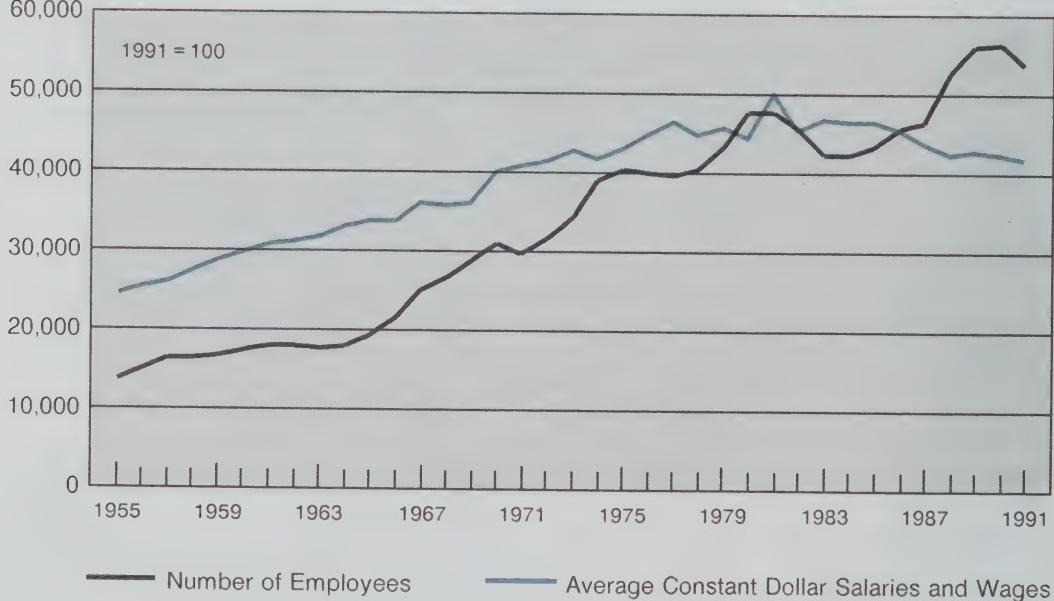
Figure 4.6

Number of Employees and Average Salaries (Current and Constant 1991 Dollars), 1955-1991

Number of Employees and Average Salaries, Current Dollars



Number of Employees and Average Salaries, 1991 Constant Dollars



Sources: Statistics Canada: Catalogue Nos. 51-002 and 51-202.

Pilot Licences in Canada

The total number of pilots licensed to fly in Canada increased by 544%, from 8,543 in 1955 to 55,006 in 1991. This showed a phenomenal growth in the number of pilots to its peak in 1982 (see Table 4.6). Notable expansion periods spanned the 1960s, when the number of pilots increased by more than 80% and the 1970s when the number increased by approximately 65%. Airline transport pilots²³ increased annually in number, to total 7,900 in 1991.

Canada's economic slowdowns, structural changes in the industry and other events caused a continuous decline of 13% overall in the total number of pilots from 1982 to 1991. Most of the decline involved private licences, whose number dropped 29%. The largest annual decline occurred between 1990 and 1991 when the number of senior commercial pilots dropped 39% as a result of this category of pilots being phased out. A similar pattern was noted for commercial pilots²⁴ whose numbers dropped 9% from 1982 to 1991. The total number of airplane and helicopter instructors also declined in each year from 1982 until 1990, totalling 1,427 in 1991.

As well, the number of air traffic controllers showed annual declines beginning in 1983. Reaching a high of 1,954 in that year, their numbers declined 24% to 1,494 by 1991. At the same time, pilot licences for gliders and free balloons showed continuous growth.

The approximate age of the people to whom these licences were issued increased. From 1986 to 1991, the average age for private licence holders increased from 40 to 43, for people with commercial licences from 38 to 39, while air traffic controller's average age increased from 40 to 43.

Provincially, most licences were held in Ontario for private and commercial airplanes and air traffic controllers. The largest proportion of private and commercial helicopter licences were held in British Columbia, with Ontario running a close second.

²³ Airline transport pilots are licensed by Transport Canada as pilots in command of multi crew aircraft.

²⁴ Commercial pilots are licensed to pilot a single crew aircraft or to co-pilot a multi crew aircraft but in general represent instructors preparing to acquire their airline transport licence.

Bibliography and Further Reading:

- (1) Flight International, Sept. 1991, pages 11-17.
- (2) Air Transport Management, Nov./Dec. 1989 and Sept./Oct. 1991.
- (3) CALURA data.
- (4) "125 Years of Canadian Aeronautics, A chronology 1840-1965", by G.A. Fuller, J.A. Griffin and K.M. Molson, page 77, 91, 103, 107.

CHAPTER 5

The Affairs of Fares - A Ticket To Ride



The Affairs of Fares – A Ticket To Ride

The Canadian gold rush stimulated passenger and mail air travel in the early 1920s. Fare prices at that time were unregulated and were set according to what the market would bear, although discrimination was prohibited. Western Canada Airways, in 1927, offered passenger fares from 60 to 65 cents per passenger mile and freight charges at about \$4 per ton mile for bush operations in Manitoba and western Ontario. These exorbitant prices marked the end of the dollar-a-minute rides available at the county fairs and the dawn of commercial passenger transportation.

May 31, 1919 – The first civil demonstration in Canada by an aerial stuntman occurred when J. Fieldhouse performed on a Curtiss JN4(Can.) flown by E.C. Hoy at Vancouver.(1)

Fare prices remained unrestricted until regulation was introduced in 1938 in an effort to protect the airlines. The Board of Transport Commissioners, in that year, was given authority to investigate complaints and adjust rates and tariffs as

needed. With Trans-Canada Air Lines designated as Canada's flagship carrier and competition tightly controlled, a monopoly on most routes was created in the industry. Public interests were protected through regulation which included control on fares and tariffs. For example, in 1943, charges of 60 cents per plane mile in a contract to carry mail for the Post Office Department were protested and reduced to 45 cents per plane mile. (2) This scheme of regulated fares continued essentially unchanged until 1984, when Canada began to take steps to open the air travel market to competition. This was followed by full price deregulation in the southern domestic market in 1988 (see Figure 3.7). Northern and international fares were still governed by regulation and negotiated bilateral agreements.

With deregulation, carriers operating in southern Canada no longer needed to file their fares with the National Transportation Agency. The new Act required that carriers keep and allow public access to all their tariffs²⁵ for at least three years after their expiry date and that they could not impose any charge that was not in their posted fare. Carriers could, however, change their fare at any time with the change taking effect immediately. Carriers could now decide and had to make public the terms of their transportation. Fares for international scheduled services continued to be set by the two governments during bilateral negotiations and the carrier was still required to post the fare schedule. For international charter services²⁶, the charter carrier filed the price given to the tour operator for the rental of the aircraft with the authorities. The tour operator then set and published their fare prices which, on average, must not be offered at a loss. Foreign charter carriers were not to undercut Canadian carriers on the prices offered to tour operators.

²⁵ Except for confidential contracts

²⁶ Except for entity charter in which the whole aircraft is chartered.

With talk of impending deregulation beginning in the early 1980s, the need to monitor competition of the major scheduled airlines in Canada was recognized. Since fares are set on an individual route basis depending on the cost of a seat, the distance flown, the number of competitors and other factors, and since they do not include taxes, the fare data presented here do not represent the purchase price of an airline ticket. These data are instead, aggregate average fares.

The average price of an airline ticket changed dramatically with time. The average domestic air ticket price increased 49% from 1983 to 1991. The average international air fare, often negotiated as part of a bilateral agreement, also increased 35% over the same nine years (see Table 5.1).

Table 5.1

**Domestic and International Average Fares, by Fare Type Group,
Scheduled Services, 1983-1992**

Year	Domestic			International		
	All Fares	Business Class/ Economy	Discount	All Fares	Business Class/ Economy	Discount
\$						
1983	121.10	135.30	100.90	252.60	278.80	228.90
1984	121.80	142.30	99.00	257.90	297.30	231.80
1985	127.80	154.40	103.90	272.30	319.50	241.90
1986	133.60	167.10	110.20	284.20	322.40	258.00
1987	146.80	181.20	117.90	305.20	333.90	283.40
1988	149.30	208.60	116.10	314.60	357.30	292.70
1989	174.40	232.90	138.40	327.90	392.90	298.20
1990	190.20	268.40	149.80	337.80	462.20	294.50
1991	180.80	257.60	148.00	340.50	551.50	294.40
1992 ^p	178.70	260.30	146.60	347.60	593.70	306.90

Note: Data for 1983 to 1986 included Air Canada, Canadian Airlines, Eastern Provincial, Nordair and Pacific Western.

Data for 1987 to 1989 included Air Canada, Canadian Airlines and Wardair.

Data for 1990 included Air Canada and Canadian Airlines.

Data for 1991 and 1992 included Air Canada, Canadian Airlines, Air BC and Time Air.

Source: Statistics Canada: Catalogue No. 51-206.

Price increases were driven by the end of the fare wars of 1988 and as Air Canada regained the market share lost during the previous year's strike. Reduced competition, lessened with the purchase of Wardair by Canadian Airlines' parent, PWA Corp., also contributed to increased fares. The need for traffic stimulation declined as the industry was in a growth cycle in 1989. As well, escalating fuel and other expenses and the financial requirements of the forthcoming fleet renewal programs were recognized through increased fare prices by the industry in 1990. These increases were followed by a 5% decrease in 1991, when carriers were trying to boost the declining passenger volumes during the recession.

Air fares are not the simple structure they were in the 1930s. Airlines know that to fly an empty seat costs almost as much as to fly it with a passenger. To fill these vacant seats, the concept of seat management was developed in the 1970s, where aircraft seats for each flight, were divided into distinct non-overlapping fare types. An airline, using computer technology to analyze the historic sales from their computer reservation systems, could forecast how many full fare seats on the next flight were likely to be unfilled. This was accomplished taking into account the fact that full fare business travellers often booked at the last minute and additional passengers would board at intermediate points. If a carrier then sold these surplus seats at a price slightly higher than the cost of the seat (i.e. the meal and any other variable costs), the difference between the cost of the seat and the new ticket price would be profit. In this way, a carrier could attract other price-sensitive passengers, who would not normally fly if they had to pay the full cost of a ticket.

Conditions or fences on the new discounted fares for these discretionary budget-conscious travellers were implemented to prevent those must-fly passengers, who were flying at full fare, from buying tickets at the lower prices. These conditions included advance purchase deadlines, round trip requirements, minimum stay such as Saturday night stopovers and refund penalties, making them less attractive to the business traveller.

Air carriers offered travellers several fares on the different markets they operated. These fares are grouped into five general fare types differentiated by a price hierarchy and by the services offered. First class is the most expensive level, providing the passenger with premium quality services such as larger seats and a complimentary bar. Business class, as the name suggests, is aimed at passengers travelling for work. It is less expensive than first class and usually offers amenities such as advanced seat assignment. The economy class, on the other hand, is a basic fare level which is less expensive than first class and does not include the amenities, while a discount fare is a reduced fare calculated as a percentage of the normal full fare with one or more travel restrictions. Discount fares, generally known as seat sales, include various types such as charter class, advance purchase excursion and group fares. Other fares represent industry and agency fares, as well as military fares.

Even though yield management focused on the least expensive seats, these seats were not the key to airline profits. Profits came rather from filling the aircraft with an optimum mix. Business class passengers wanted frequent service and last minute availability, while economy passengers looked for lower prices. In 1991, less than one percent of domestic passengers flew first class, 4% business class, 26% economy class, 66% on a discount ticket and 4% flew with the other fare type tickets.

The price distinctions between the fare classes can be seen in 1991, when domestic first class passengers paid an average of \$558, while passengers travelling business class or economy class paid \$456 and \$227, respectively. Domestic first class fares were 1.2 times higher than domestic business class fares which, in turn, were two times higher than domestic economy class fares. Discount fares were approximately 35% lower than the economy fares.

Business and economy class fares contributed more than discount fares to the annual overall price increases in both the domestic and international sectors from 1983 to 1991 (see Table 5.1). For example, business and economy class fares combined, jumped by 15% in the domestic sector and by 18% in the international sector in 1990. Discount fares, however, increased by 8% in the domestic sector and decreased by 1% in the international sector in 1990. Overall, business and economy fares combined and all fares, showed a steady pattern of growth since 1983, while discount fares were more sluggish. The mixed composition of the discount fare type may explain its large fluctuations.

While airlines used more and larger discounting to fill empty seats (see Figure 5.1), they also increased their revenues through increased regular fares in order to offset higher airline expenses. The difference in ticket prices between the first and business class fares and the cheaper fares, paid for the extra amenities of the higher classes and also helped to raise extra revenues. As noted, while full fares increased, the number and size of the discount also grew. The proportion of domestic scheduled passengers who flew on discount fares increased by 21 percentage points, from 45% in 1983 to 66% in 1991 (see Table 5.2). Shallow discount traffic accounted for a growth of seven percentage points, while deep discount traffic²⁷ accounted for an increase of 15 percentage points (see Figure 5.1). This was evident even on routes without competing carriers.

The major increase in the use of discount fares occurred in 1988. Although there were more independently owned airlines before deregulation, they did not compete on many routes. The increase in competition with deregulation partially explained the increased use of discounted fares over the years.

²⁷ Fares discounted by 25% or more off the full economy fare before 1985 and 30% or more from 1985 on.

Table 5.2

Discount Traffic by Sector, 1983-1992

Percentage of Passengers	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 ^p
Domestic	45.1	49.5	53.4	57.9	54.6	63.4	60.6	63.6	66.2	67.3
Southern	45.9	50.3	54.1	58.7	55.3	64.2	61.3	64.3	67.4	68.2
Short-Haul	35.5	40.9	45.7	50.7	45.9	57.4	52.2	58.2	62.3	63.3
Long-Haul	57.6	61.2	63.6	66.7	64.0	69.8	67.8	68.4	72.3	72.9
Northern	30.8	34.5	39.5	42.3	40.3	44.8	44.9	47.5	45.0	50.3
International	54.4	66.6	65.7	67.0	66.6	69.2	68.8	70.5	76.0	77.4

Percentage of Passenger-kilometres

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 ^p
Domestic	54.6	57.9	60.2	63.9	61.1	68.5	66.9	67.5	71.3	71.8
Southern	55.5	58.8	61.0	64.7	61.9	69.1	67.4	68.1	72.2	72.5
Short-Haul	37.6	43.3	47.5	52.5	47.6	58.9	53.7	60.4	64.6	65.3
Long-Haul	60.1	62.9	64.5	67.6	65.0	71.1	69.7	69.3	73.7	73.9
Northern	33.6	36.6	41.7	45.2	41.8	47.6	47.9	50.9	48.7	54.2
International	64.6	74.6	74.0	74.5	76.1	78.5	77.4	76.1	78.6	79.5

Note: Data for 1983 to 1986 included Air Canada, Canadian Airlines, Eastern Provincial, Nordair and Pacific Western.

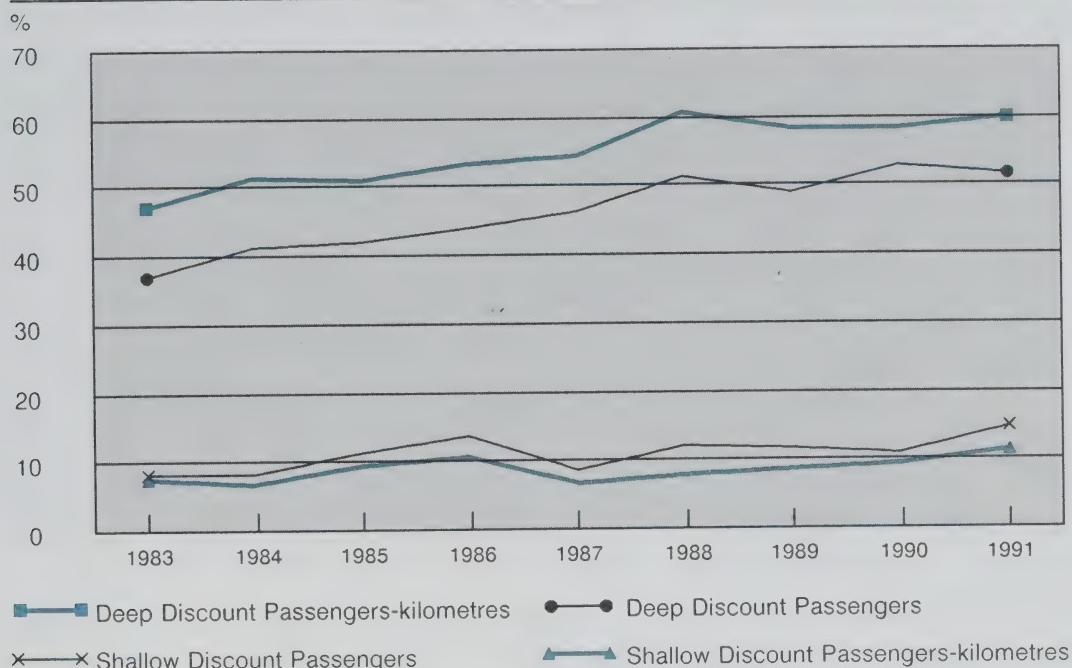
Data for 1987 to 1989 included Air Canada, Canadian Airlines and Wardair.

Data for 1990 included Air Canada and Canadian Airlines.

Data for 1991 and 1992 included Air Canada, Canadian Airlines, Air BC and Time Air.

Source: Statistics Canada: Catalogue No. 51-206.

Figure 5.1
Shallow and Deep Discount Traffic in Canada, 1983-1991



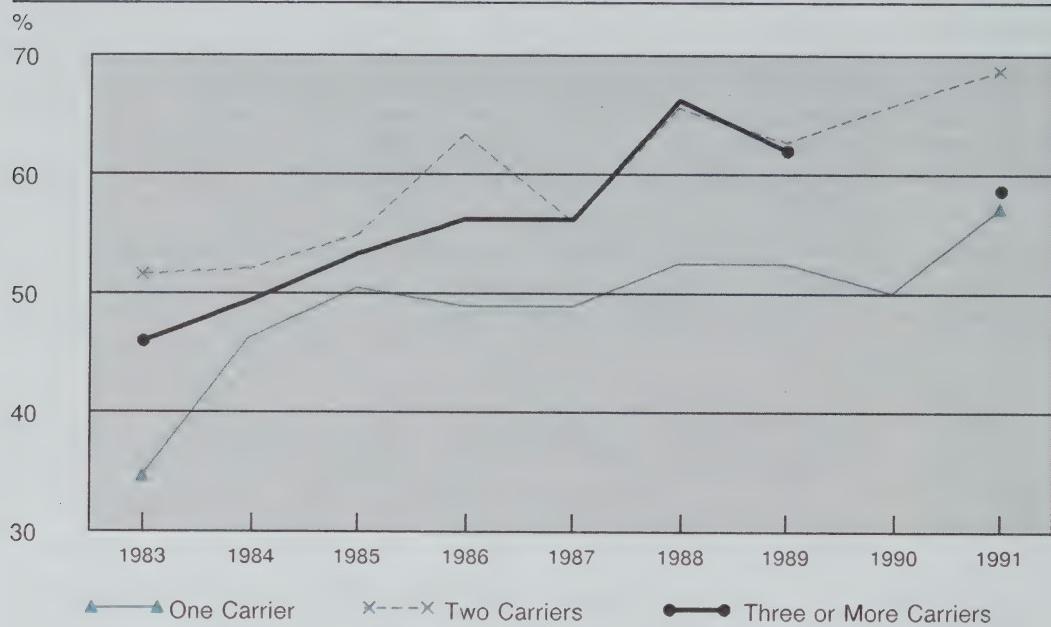
Note: Prior to 1985, deep discount fares had discounts of 25% or more off the full economy fare. Since 1985, deep discount fares had discounts of 30% or more off the full economy fare. Data for 1983 to 1986 included Air Canada, Canadian Airlines, Eastern Provincial, Nordair and Pacific Western. Data for 1987 to 1989 included Air Canada, Canadian Airlines and Wardair. Data for 1990 included Air Canada and Canadian Airlines. Data for 1991 included Air Canada, Canadian Airlines, Air BC and Time Air.

Source: Statistics Canada: Internal Reports.

In addition to the reduced protection of Canada's flag carrier in the early 1980s, the National Transportation Agency removed the distinction between charter and scheduled carriers in the deregulated southern region of Canada in 1988 (see Chapter 8). Some charter operators thereby increased the competition to scheduled services. On routes operated by charter carriers, scheduled carriers used discount fares to prevent loss of market share to these carriers as well as to entice additional passengers. The nine point increase in discount traffic in 1988, coincided with Wardair's entry into the scheduled domestic market. Wardair had a stated policy to price their domestic economy fares below their major competitors.

The number of carriers operating scheduled services in a domestic market also had a definite impact on the amount of fare discounting. Travellers on routes served by only one carrier were less likely to have cheaper fares than travellers on routes with competition from at least one other major carrier. Discount passengers accounted for 57% of passengers on routes with one carrier in 1991, for example. This increased to 69% on routes served by two carriers (see Figure 5.2). Competition among airlines also influenced the cost of travel. Between 1983 and 1991, average discount air fares on routes served by only one carrier showed an increase of 81%. Comparable figures on routes with two carriers were more variable from year to year but increased less overall, with only a 50% price gain between the lowest fare in 1987 and the highest fare in 1991 (see Figure 5.3).

Figure 5.2
Percentage of Passengers Travelling on Discounted Air Fares, by Number of Major Carriers Serving a City-Pair, 1983-1991



Note: Data for 1983 to 1986 included Air Canada, Canadian Airlines, Eastern Provincial, Nordair and Pacific Western.
 Data for 1987 to 1989 included Air Canada, Canadian Airlines and Wardair.
 Data for 1990 included Air Canada and Canadian Airlines.
 Data for 1991 included Air Canada, Canadian Airlines, Air BC and Time Air.
 1990 data for Three or More Carriers are not available.

Source: Statistics Canada: Internal Reports.

Passengers travelling on routes served by more than one carrier also benefitted by a higher degree of discount off the economy fare. Passengers on over half of the routes served by two carriers received a discount of 50% or more in 1988, 1990 and 1991. Where a carrier did not have to share the market with another major carrier, discounts of 50% or more were offered on less than a third of the routes (see Table 5.3).

June 14-15, 1919 – The first direct trans-Atlantic flight was made by John Alcock and Arthur Whitten Brown who left St. John's, Nfld, in a twin-engine Vickers Vimy and landed in a bog at Clifden, Ireland. (1)

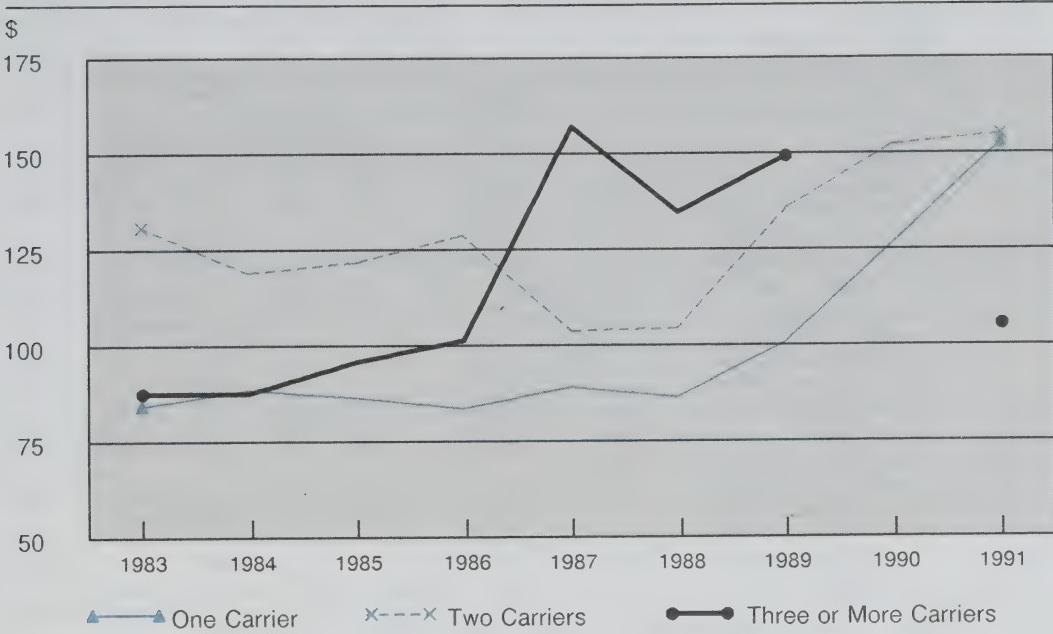
Distance was an important factor in the use of discount fares (see Table 5.2). An examination of passengers and passenger-kilometres showed that for short-haul²⁸, long-haul²⁹ and international trips, the percentage of passengers travelling on

discounts grew with the distance they travelled. In fact, the proportion of passengers travelling on discounts on short-haul trips was considerably less than for long-haul or international trips from 1983 to 1991. Since passenger-kilometres measure distance travelled, by definition, the proportion of discount passenger-kilometres on short-haul trips was smaller than on long-haul trips.

²⁸ Distances less than 800 kilometres.

²⁹ Distances of 800 kilometres or more.

Figure 5.3
**Average Discount Air Fares, by Number of Major Carriers Serving
 a City-Pair, 1983-1991**



Note: Data for 1983 to 1986 included Air Canada, Canadian Airlines, Eastern Provincial, Nordair and Pacific Western.
 Data for 1987 to 1989 included Air Canada, Canadian Airlines and Wardair.
 Data for 1990 included Air Canada and Canadian Airlines.
 Data for 1991 included Air Canada, Canadian Airlines, Air BC and Time Air.
 1990 data for Three or More Carriers are not available.

Source: Statistics Canada: Internal Reports.

The effect of distance on fare discounting also explained the traditionally lower use of discount fares in the intraprovincial sector than in the interprovincial sector (see Figure 5.4). The intraprovincial share of the market occupied by discounted passengers declined nine percentage points from 1984 to 1990. The total passenger market share for the intraprovincial sector was approximately 21% compared to approximately 79% for the interprovincial sector in 1990 (see Table 5.4). Most of the traffic carried by the major carriers, was interprovincial in nature, increasing from about 68% of the market in 1984 to about 79% in 1990. This occurred as the major carriers created family networks to service their short-haul routes during this period.

The transfer from major to affiliate carriers on low-density regional and local routes (intraprovincial), which were less discounted than long-haul routes, resulted in a small increase in the level of discounting in 1990. It also helped to explain the widening distribution of the intra and interprovincial traffic. The use of discounts on long-haul routes did, however, also indicate that the major carriers concentrated on increasing their market shares on these routes.

Table 5.3

Amount of Discount Off the Economy Fare, by Number of Major Carriers Serving the City-Pair, 1988, 1990-1991

Amount of Discount Off the Economy Fare	Number of Major Carriers Serving the City-Pair		
	One	Two	Three or More
Percentage of City-Pairs			
1988			
< 30%	34.3	1.8	-
≥ 30% and < 40%	12.5	3.6	7.1
≥ 40% and < 50%	27.7	41.8	7.1
≥ 50% and < 60%	25.5	52.7	85.7
≥ 60%	-	-	-
1990			
< 30%	40.3	-	-
≥ 30% and < 40%	16.1	5.8	-
≥ 40% and < 50%	29.0	40.4	-
≥ 50% and < 60%	12.4	53.9	-
≥ 60%	2.2	-	-
1991			
< 30%	25.6	-	-
≥ 30% and < 40%	14.4	5.7	15.4
≥ 40% and < 50%	31.2	37.1	53.8
≥ 50% and < 60%	24.2	55.7	30.8
≥ 60%	4.7	1.4	-

Note: Data for 1988 included Air Canada, Canadian Airlines and Wardair.

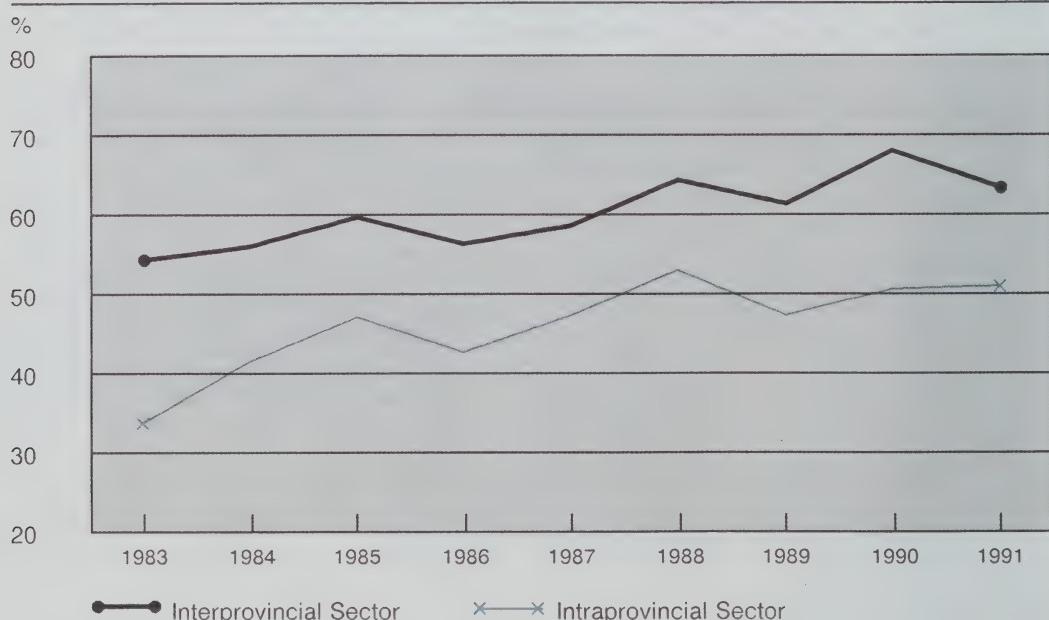
Data for 1990 included Air Canada and Canadian Airlines.

Data for 1991 included Air Canada, Canadian Airlines, Air BC and Time Air.

Source: Statistics Canada: Internal Reports.

Figure 5.4

Discount Fare Utilization at the Intra and Interprovincial Levels, 1983-1991



Note: Data for 1983 to 1986 included Air Canada, Canadian Airlines, Eastern Provincial, Nordair and Pacific Western.

Data for 1987 to 1989 included Air Canada, Canadian Airlines and Wardair.

Data for 1990 included Air Canada and Canadian Airlines.

Data for 1991 included Air Canada, Canadian Airlines, Air BC and Time Air.

Source: Statistics Canada: Internal Reports.

Table 5.4

**Discount Traffic at the Intra and Interprovincial Level, Market Share,
1983-1992**

Total Passengers	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 ^p
Sector										
Intraprovincial	31.0	31.8	29.9	29.9	26.8	25.0	23.3	21.5	23.7	25.6
Interprovincial	69.0	68.2	70.1	70.1	73.2	75.0	76.7	78.5	76.3	74.4
Discount Passengers										
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 ^p
Sector										
Intraprovincial	21.8	25.7	25.2	24.5	22.8	21.5	19.0	16.9	20.0	20.5
Interprovincial	78.2	74.3	74.8	75.5	77.2	78.5	81.0	83.1	80.1	79.5

Note: Data for 1983 to 1986 included Air Canada, Canadian Airlines, Eastern Provincial, Nordair and Pacific Western.

Data for 1987 to 1989 included Air Canada, Canadian Airlines and Wardair.

Data for 1990 included Air Canada and Canadian Airlines.

Data for 1991 and 1992 included Air Canada, Canadian Airlines, Air BC and Time Air.

Source: Statistics Canada: Internal Reports.

July 13, 1949 - A Canadian Pacific Air Lines Douglas DC-4M North Star was the first scheduled trans-Pacific flight from Vancouver to Sydney, Australia. (1)

The split between business travel and travel for other purposes generally depended on the length of the trip and this contributed to the larger use of discount fares on long-haul routes. For short trips,

the relative proportion of business travel was greater than for long trips. Similarly, the proportion of passengers travelling for non-business purposes on transcontinental trips were in the majority. Short-haul routes were, therefore, harder to fill with lower fares since must-fly passengers were more concerned with frequency and last minute availability than with lower prices (that came with restrictive fencing conditions). An exception, however, was the short-haul, Toronto-Ottawa-Montréal, (mostly) business corridor. In this market, strong increases in deep discount air fares reflected the competitive presence of additional carriers such as Wardair, City Express and eventually Nationair and the intense attempts to stimulate new demand.

In the other city-pairs which included one of the top 10 cities of enplanement in Canada, the proportion of passengers who flew on discount fares increased from 1983 to 1991 (see Table 5.5). Two years, 1987 and 1989, showed a decline in the proportion of discount fare use for reasons previously noted. Hovering around 30% in 1983 for the top 10 cities, most of these cities showed more than 60% of the short-haul passengers travelling on discounts by 1991. Although there was some fluctuation at the city level, in most years, Vancouver had the highest proportion of discount passengers on short-haul routes, with Halifax showing the second highest proportion. The proportion of discount passengers at the top 10 cities travelling on long-haul flights showed a similar but less dramatic increase. Most cities showed at least half of all long-haul passengers travelled on a discount in 1983 which increased to at least 70% of long-haul passengers by 1991. Saskatoon followed by Regina, generally showed the highest proportion of discount passengers in this period (see Table 5.5).

Table 5.5

Discount Fare Traffic for Selected Cities, 1983-1992

City of Enplanement	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 ^p
%										
Short-Haul										
Calgary	37.3	44.0	45.0	48.8	45.2	55.1	54.3	52.3	61.6	65.8
Edmonton	17.4	21.7	23.3	25.6	22.3	33.3	33.5	26.6	42.8	46.5
Halifax	31.0	41.4	49.0	50.4	55.4	58.3	63.0	x	x	x
Montréal	27.4	39.1	42.2	47.7	42.5	59.3	50.4	66.4	70.7	68.4
Ottawa	23.7	32.2	35.0	42.3	37.4	54.5	47.8	53.9	60.0	60.3
Regina	33.7	43.9	44.5	46.5	44.5	53.5	47.7	51.3	60.7	59.7
Saskatoon	34.3	46.0	45.6	47.9	48.5	56.5	48.9	51.6	60.3	61.5
Toronto	26.8	36.9	41.3	46.9	40.6	57.6	48.6	61.8	67.7	65.9
Vancouver	43.9	52.5	60.0	68.2	63.3	64.9	65.1	62.3	61.7	64.4
Winnipeg	34.8	40.2	40.6	43.3	40.8	47.4	39.9	41.2	49.4	45.6
Long-Haul										
Calgary	54.9	64.8	66.8	65.6	64.5	70.5	69.6	67.7	72.4	73.2
Edmonton	49.8	59.1	62.4	65.0	62.8	68.5	67.4	66.8	70.2	72.6
Halifax	39.2	51.3	57.7	61.7	60.7	64.3	62.1	65.6	69.0	68.4
Montréal	45.6	56.7	60.5	62.1	58.7	65.1	62.4	64.8	68.6	68.3
Ottawa	38.6	47.1	53.6	58.8	56.4	62.5	61.9	63.6	64.5	67.4
Regina	53.3	65.7	66.9	71.1	68.3	72.6	72.2	73.3	74.9	76.4
Saskatoon	54.5	67.9	70.8	74.6	71.1	75.5	72.3	74.2	75.3	75.9
Toronto	53.9	63.1	64.0	67.4	65.8	72.2	70.4	70.5	74.5	74.0
Vancouver	57.9	64.8	65.2	69.2	64.7	70.2	68.9	68.2	73.2	74.1
Winnipeg	49.7	58.9	62.3	65.8	61.9	69.1	65.4	65.4	69.5	71.8

Note: Edmonton includes Edmonton International and Edmonton Municipal.

Montréal includes Montréal International (Dorval) and Mirabel International (for domestic portions of international flights).

Data for 1983 to 1986 included Air Canada, Canadian Airlines, Eastern Provincial, Nordair and Pacific Western.

Data for 1987 to 1989 included Air Canada, Canadian Airlines and Wardair.

Data for 1990 included Air Canada and Canadian Airlines. Data for 1991 and 1992 included Air Canada, Canadian Airlines, Air BC and Time Air.

Source: Statistics Canada: Catalogue No. 51-206.

Table 5.6

Average Discount Air Fares, by Day of the Week, for Selected Domestic and U.S. Southern Markets, 1989 and 1990

Day of the Week	Fare Groups					
	All Discounts		Shallow Discounts		Deep Discounts	
	1989	1990	1989	1990	1989	1990
Selected Domestic Markets						
Sunday	74.3	78.7	103.9	115.7	66.0	70.2
Monday	76.8	91.6	109.7	124.3	64.1	77.7
Tuesday	90.6	99.3	125.1	125.8	62.8	86.9
Wednesday	99.3	97.0	126.2	124.8	60.6	87.4
Thursday	96.3	93.3	125.1	123.0	61.9	81.8
Friday	94.1	90.3	124.6	122.9	60.2	79.8
Saturday	86.3	75.7	119.4	115.1	65.7	67.9
Selected U.S. Southern Markets						
Sunday	160.9	166.9	222.6	244.0	142.0	136.8
Monday	154.1	153.2	211.5	239.1	140.4	126.1
Tuesday	141.3	142.8	197.2	235.8	131.9	125.0
Wednesday	133.1	147.0	203.3	208.5	120.0	120.9
Thursday	141.8	154.5	215.7	244.4	127.7	126.3
Friday	137.4	161.7	205.0	238.7	123.0	129.9
Saturday	143.9	151.4	209.5	232.9	129.0	134.3

Note: Data for 1989 included Air Canada, Canadian Airlines and Wardair.

Data for 1990 included Air Canada and Canadian Airlines.

Source: Statistics Canada: Internal Reports.

Table 5.7

Distribution of Discounted Passengers, by Day of the Week, for Selected Domestic and U.S. Southern Markets, 1989 and 1990

Day of the Week	Fare Groups					
	All Discounts		Shallow Discounts		Deep Discounts	
	1989	1990	1989	1990	1989	1990
Selected Domestic Markets						
Sunday	70.1	73.2	15.3	13.6	54.8	59.6
Monday	63.8	60.2	17.8	18.0	46.1	42.2
Tuesday	50.0	55.1	22.3	17.6	27.7	37.5
Wednesday	39.9	56.5	23.6	14.6	16.4	41.9
Thursday	40.3	58.6	21.9	16.4	18.4	42.3
Friday	40.4	62.9	21.3	15.3	19.2	47.6
Saturday	50.3	73.2	19.3	12.0	31.0	61.1
Selected U.S. Southern Markets						
Sunday	81.8	79.7	19.2	22.4	62.6	57.3
Monday	78.9	81.7	15.3	19.6	63.7	62.1
Tuesday	78.4	79.3	11.3	12.8	67.1	66.5
Wednesday	75.6	83.4	11.9	24.9	63.6	58.6
Thursday	78.6	82.2	12.6	19.7	66.0	62.5
Friday	78.0	76.6	13.8	22.4	64.3	54.2
Saturday	76.8	84.2	14.2	14.6	62.6	69.6

Note: Data for 1989 included Air Canada, Canadian Airlines and Wardair.

Data for 1990 included Air Canada and Canadian Airlines.

Source: Statistics Canada: Internal Reports.

Carriers also recognized the significance of time in that there were particular times of the day, days of the week and times in the year when they could benefit from the use of discounting to combat reduced passenger volumes. For example, the lowest discount air fares (see Table 5.6) and the largest proportion of discounted passengers (see Table 5.7) in the Toronto-Ottawa-Montréal corridor occurred on Saturday and Sunday, when there were fewer must-fly passengers and carriers tried to encourage discretionary flyers to use the unfilled seats. Almost three-quarters of weekend passengers in the golden triangle³⁰ travelled on discounted fares compared to just over half of the passengers on the midweek days in 1990. As well, average discounted air fares on Saturday and Sunday were about three-quarters the cost of midweek fares. Accordingly, this was most pronounced with deep discount fares where six out of every ten passengers benefitted from deep discounts compared to the four out of every ten passengers that had deep discounted fares during the week.

By contrast, the use of discount fares between Canada and selected destinations in the U.S. southern markets occurred on every day of the week. This occurred to attract the price-sensitive leisure traveller who, due to their greater flexibility, travelled on vacation on any day of the week. Also, the level of discounting reflected the increased level of competition in this market. The level of all discount passengers was about 80% regardless of which day travel occurred on (see Table 5.7). Average discount fares to these U.S. southern markets were, however, cheaper on midweek days, suggesting that carriers tried to encourage travel on these days (see Table 5.6). The reason for the significantly greater bargains for Canadians flying to U.S. cities than in domestic markets, was that Canadian carrier prices generally matched their U.S. competitors and these prices were not rising. Although airlines must file all fares for transborder services to both governments, the fares are rarely rejected. (3)

³⁰ *Toronto-Ottawa-Montréal.*

Bibliography and Further Reading:

- (1) "125 Years of Canadian Aeronautics, A Chronology 1840-1965", by G.A. Fuller, J.A. Griffin and K.M. Molson, page 95.
- (2) "Voyageurs of the Air, A History of Civil Aviation in Canada, 1858-1967", by J.R.K. Main, pages 60, 140, 144, 151.
- (3) Westac, May 1991, Vol. 17 No. 1.
- (4) "Competition for the Discount Traveller is Alive and Well", by Sam Barone, Air Transport Management, Oct. 11, 1990.

CHAPTER 6

Landing with Confidence - Airports



Landing with Confidence – Airports

Officially, the first flight at an airfield in Canada occurred over 75 years ago at Long Branch, Toronto. Two years after this, initiated by the needs of World War I, five aerodromes were constructed in Ontario for the Royal Flying Corps (RFC) pilot training program. By the end of the war, six aerodromes and 400 buildings had been built. This is not, however, to say that these were the only locations at which aircraft flew. Aviators took off and landed on everything from cow pastures and race tracks to frozen lakes, exhibition grounds and golf courses. (1)

The average airport runway was made of sod, clay or loam as recently as the 1930s and the terminal that went with it was usually not much more than a lean-to attached to a hangar.

Airport construction began across Canada with funding from private flying clubs and local governments. This construction was stepped up with the creation of the federal Department of Transport in 1936. As part of its mandate and later using a job creation program, airports were built at 100 mile intervals across the country, usually following the railway line.

Canadian airports today have developed into state-of-the-art traffic management operations. They were designed for speed and convenience offering air travellers every possible amenity. At the same time, they provided the airlines operating from them with an infrastructure for their overhaul shops, hangars and executive offices. With some international airports accommodating hundreds of take-offs and landings in a single day, the old grass landing strips have long ago given way to surfaces of smoothly paved or concrete runways.

It has also been suggested that the aircraft defined the airport. As aircraft technology advanced, airports adapted, trying to catch up to these rapid developments.

"In surveying the history of the airport, there seems to be three constants: (first) the airport is a mutable form constantly under construction, no airport has ever called itself complete; (second) the "new" airport, even if hailed as ahead of its time, is soon congested or even out of date; (third) faced with new developments in aviation technology, the airport adapts accordingly to accommodate these developments: In short the airplane predicates the airport, and not the other way around." (2)

Canada had approximately 2,025 civil aerodromes with published information and 17 military aerodromes of which eight are part of the North Warning System in 1991. An aerodrome is any place on which an aircraft can land, including frozen water and building tops. Of these 2,025 civil aerodromes, 1,300 were land, 350 were water and 375 were heliports. In total, there were approximately 760 airports certified by Transport Canada for public use.

Geographically, the Ontario region had the most certified airports with a total of 161, followed by the Quebec region with 151 and the Western region with 149. The Pacific, Central and Atlantic regions ranked fourth to sixth with 125, 109 and 65, respectively. (3)

January 23, 1930 – The first complete airport lighting system in Canada began operations at Calgary. (5)

Tens of millions of dollars are provided each year by Transport Canada to support the operation of municipal and other airports and to assist in establishing or improving municipal, local and other airports (see Chapter 8).

The most important airports in terms of passengers handled were Lester B. Pearson, Vancouver and Montréal (Dorval) with about 19, 9 and 6 million passengers, respectively, in 1991. Similarly, the next three busiest airports were Calgary, Ottawa and Halifax with five million, three million and two million passengers handled, respectively.



Toronto Island Airport, The Toronto Harbour Commissioners

What resulted from Canada's first air field was a constant updating of facilities as our airports struggled to keep up with the growth in passenger traffic, in cargo movements and the changing technology of aircraft. The opening of Terminal 3 in Toronto in 1990 was an example of this.

Canada's airports experienced great traffic growth over the last 30 years with three major exceptions. The first came with the fuel crisis in the 1970s, the second and third in the early 1980s and ten years later in the early 1990s, during the economic recessions. As noted, in all three periods the airline industry experienced serious declines in activity.

Nonetheless, over the last three decades Canada's airports evolved into busy, bustling crossroads for millions of passengers and an increasingly vital cargo transportation network. Canadian airports have come a long way from the grass runways of the early days.

Total aircraft movements at airports with air traffic control towers showed four distinct periods from 1964 to 1991. The first period saw total aircraft movements surge 215% to the 1979 total of seven million movements. This era was followed by six years surrounding the 1982 recession of annual average declines of 6%. Total movements increased again in the five years beginning in 1986, to reach a high of just over six million movements in 1990. Many communities had more frequent service, often with turbo-prop aircraft replacing jets. The fourth period showed the 1991 total equal the 1982 recessionary level of 5.6 million movements (see Table 6.1).

Table 6.1
Aircraft Movements at Airports with Air Traffic Control Towers, 1964-1992

Year	Number of Airports	Total Movements	Number of Movements by Type of Operation		
			Itinerant	Local	Simulated Approaches
Number of movements ('000)					
1964	33	2,289	989	1,211	89
1965	33	2,689	1,114	1,483	92
1966	33	3,317	1,320	1,893	104
1967	39	4,038	1,611	2,313	114
1968	42	4,049	1,668	2,266	115
1969	46	4,326	1,821	2,381	124
1970	47	4,376	1,890	2,374	112
1971	53	4,895	2,000	2,736	159
1972	55	4,945	2,235	2,710	..
1973	56	5,254	2,587	2,667	..
1974	57	5,693	2,540	3,153	..
1975	60	6,398	2,994	3,404	..
1976	60	6,487	3,038	3,449	..
1977	59	6,689	3,228	3,461	..
1978	60	6,862	3,408	3,454	..
1979	61	7,201	3,645	3,556	..
1980	61	7,065	3,697	3,368	..
1981	60	6,701	3,569	3,132	..
1982	60	5,590	3,067	2,523	..
1983	61	5,272	2,912	2,360	..
1984	61	5,067	2,966	2,101	..
1985	61	4,938	3,031	1,907	..
1986	61	5,201	3,144	2,056	..
1987	61	5,510	3,366	2,144	..
1988	60	5,687	3,516	2,151	..
1989	60	5,956	3,706	2,250	..
1990	60	6,058	3,759	2,300	..
1991	56	5,540	3,488	2,053	..
1992	56	5,266	3,416	1,850	..

Note: Since 1972, simulated approaches were included as itinerant or local movements.
Source: Statistics Canada/Transport Canada: TP577

Local Movements

The proportion of local movements to itinerant movements also changed between 1964 and 1991. An itinerant movement refers to an aircraft which proceeds to or arrives from another location or which leaves the circuit³¹ (4) but returns without landing at another airport. A local movement is that in which the aircraft stays within the circuit.

October 8, 1913 – The first commercial inter-city and first interprovincial flight in Canada was made by William Curtis Robinson in a Vought/Lillie tractor biplane (50hp Gnome motor) carrying copies of the first edition of the newspaper, Montréal Daily Mail, from Snowdon Junction, Montréal, Quebec, to Slattery's Field, Ottawa, Ontario. (5)

Growth in local movements suffered a number of setbacks. The federal government eliminated the subsidy paid to students at flying clubs in the 1960s. There were just over a million local movements and under a million itinerant movements in 1964. Fuel scarcities and consequent hikes in fuel prices contributed to declines

in all flying activity in the early 1970s. Landing fees at many of the major airports also discouraged local traffic in the 1980s. In order to alleviate departure delays in the late 1980s, Pearson was declared a restricted air zone where aircraft required slot reservations. The number of available slots were apportioned to scheduled, charter and general aviation flights with general aviation receiving the fewest number.



Piper PA 16 (1949), National Aviation Museum

The result of these effects and the increased passenger demand caused a reversal of the importance of itinerant and local movements at Canadian airports. Local movements outnumbered itinerant movements at control towered airports in the early years until 1977. Total movements were split equally between local and itinerant movements by 1978. Since then, itinerant movements comprised a progressively larger share of total movements as commercial aviation gained a stronger foothold than recreational and other flying. Since 1986, Lester B. Pearson, Montréal International (Dorval) and Vancouver International had only itinerant movements (see Table 6.2).

³¹ The circuit is the distance around an airport required in order for an aircraft to take off, reach a height of 1,000 feet, circle and land at the same airport.

Table 6.2

Local Aircraft Movements at Airports with Air Traffic Control Towers, 1965, 1970, 1975, 1980, 1985, 1988, 1989, 1990, 1991, 1992

Airports	1965	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
	('000)															
Abbotsford, B.C.	55	70	104	96	105	65	53	49	54	71	75	93	97	99	107	106
Baie Comeau, Que.	6	10	12	10	6	11	13	12	6	9	9	8	5	5	4	5
Boundary Bay, B.C.	..	..	..	..	..	..	25	59	62	73	90	99	132	133	148	128
Brandon, Man.*	..	35	90	43	40	37	25	24	18	23	18	16	20	19	..	..
Buttonville, Ont. **	..	156	149	147	136	139	135	108	80	87	94	105	113	128	87	77
Calgary International, Alta.	96	125	59	51	45	41	40	44	35	31	36	35	19	8	4	5
Castlegar, B.C.*	..	..	..	26	26	20	15	11	13	15	13	15	10	12	..	..
Charlottetown, P.E.I.	..	19	14	7	15	15	12	6	8	12	7	6	8	8	8	5
Edmonton International, Alta.	11	32	48	11	10	14	13	12	15	17	20	22	22	19	13	11
Edmonton Municipal, Alta.	107	103	136	7	10	5	4	4	6	4	2	2	2	3	3	2
Fort McMurray, Alta.	..	..	..	11	20	23	18	19	20	22	22	15	17	21	19	20
Fort St. John, B.C.	26	5	10	19	23	11	15	13	10	7	6	4	5	6	6	6
Fredericton, N.B.	28	19	39	56	46	28	29	26	24	14	12	10	10	10	9	13
Gander International, Nfld.	18	42	9	7	6	13	5	6	9	13	11	11	12	10	9	11
Goose Bay, Nfld.	34	17	2	6	7	7	8	9	11	6	16	..	..	..	..	..
Grande Prairie, Alta.	..	14	24	28	13	15	15	12	15	17	13	12	8	8	8	8
Halifax International, N.S.	18	34	37	28	31	25	14	13	10	11	5	18	29	26	24	21
Hamilton City, Ont.	..	132	140	141	123	110	85	77	69	73	94	92	75	72	65	59
Kamloops, B.C.	..	21	22	44	39	28	29	23	17	13	16	14	10	12	15	13
Kelowna, B.C.	..	..	30	31	35	17	16	12	13	13	16	20	18	23	19	23
Langley, B.C.	..	136	140	114	80	74	62	69	72	74	78	68	63	51	39	..
Lester B. Pearson International, Ont.	39	44	10	5	2	4	3	4	3	1	1	..	..	..	..	..
Lethbridge, Alta.	16	28	37	24	29	21	24	25	17	27	22	25	24	27	23	15
London, Ont.	42	66	70	82	66	68	83	69	41	51	55	53	53	53	49	46
Mirabel International, Que. **	..	..	..	12	14	14	12	15	12	12	14	23	21	13	14	10
Moncton, N.B.	39	62	83	87	70	47	51	44	39	47	41	42	46	50	50	29
Montréal International, Que. **	104	99	5	2	1	1	1	1	1	..	..	..	..	..	..	..
North Bay, Ont.	11	38	55	59	51	60	69	63	47	52	47	50	53	60	65	73
Oshawa, Ont.	..	67	67	93	75	66	64	64	47	50	51	48	55	48	44	45
Ottawa International, Ont.	105	112	131	91	86	65	53	52	50	51	48	50	55	48	36	35
Penticton, B.C.	..	20	37	37	24	17	13	9	11	9	15	25	24	19	19	18

Note: * These Towers became Flight Service Stations in 1991.

** In 1990, Buttonville became Toronto/Buttonville.

*** In 1991, Mirabel International became Montréal/Mirabel Int'l and Montréal International became Montréal/Dorval Int'l.

Some totals may not add due to rounding.

Source: Statistics Canada/Transport Canada: TP 577.

Table 6.2

Local Aircraft Movements at Airports with Air Traffic Control Towers, 1965, 1970, 1975, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992 – Concluded

Airports	1965	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
('000)																
Pitt Meadows, B.C.	..	107	198	209	182	104	78	62	45	58	65	66	70	76	67	55
Prince George, B.C.	10	19	40	41	28	22	17	19	22	18	17	19	25	24	19	19
Québec, Que.	59	55	80	50	56	43	36	33	38	40	35	44	45	38	26	26
Regina, Sask.	37	54	83	53	55	38	41	40	26	33	29	30	28	31	26	22
Saint John, N.B.	14	8	28	26	22	15	14	11	13	10	11	11	10	9	9	9
Saskatoon, Sask.	48	38	85	71	64	47	44	43	43	40	47	54	52	49	39	37
Sault Ste. Marie, Ont.	..	11	42	31	28	31	28	27	25	26	28	32	32	26	36	43
Sept-Îles, Que.	11	9	12	22	22	15	7	3	4	7	6	6	6	8	8	11
Springbank, Alta.	..	56	154	171	171	122	97	86	90	82	87	80	95	98	101	87
St. Andrews, Man.	..	97	158	171	155	105	93	74	72	68	76	86	108	105	84	60
St. Catharines, Ont.*	..	..	38	72	61	51	53	40	40	39	39	30	28	28	..	..
St. Honoré, Que.	..	..	56	80	81	63	64	63	65	71	69	62	68	70	66	51
St. Hubert, Que.	..	228	197	183	176	165	153	112	105	98	102	116	155	130	112	..
St. Jean, Que.	..	20	62	44	42	34	30	28	30	31	29	23	25	25	27	29
St. John's, Nfld.	7	18	12	36	39	28	24	16	16	27	25	26	26	23	24	22
Sudbury, Ont.	..	39	39	33	36	65	48	27	26	56	56	39	41	39	52	45
Sydney, N.S.*	3	4	9	8	6	1	2	2	1	3	1	3	6	9	..	..
Thompson, Man.	..	16	11	13	9	10	12	14	8	8	5	7	9	9	7	7
Thunder Bay, Ont.	47	27	56	60	64	69	66	50	52	45	50	53	57	48	51	63
Toronto Island, Ont.	168	136	118	144	154	142	132	90	86	100	104	88	48	61	56	46
Val d'Or, Que.	5	10	8	11	13	8	7	3	1	4	5	4	2	6	4	3
Vancouver Harbour, B.C.	..	..	..	1	1	..	..	..	2	18	12	11	11	12	8	7
Vancouver International, B.C.	15	17	5	..	..	..	..	..	..	..	..	..	..	..	..	..
Victoria International, B.C.	45	57	95	80	84	63	62	61	53	60	64	71	76	82	74	73
Villeneuve, Alta.	..	..	..	122	100	85	71	65	66	70	58	54	71	79	71	61
Waterloo-Wellington, Ont.	..	53	69	87	69	56	49	52	47	50	58	46	49	39	38	38
Whitehorse, Y.T.	5	48	32	45	37	18	14	17	19	24	26	25	21	25	19	23
Windsor, Ont.	32	52	51	41	39	37	30	24	20	37	33	34	35	34	40	39
Winnipeg International, Man.	124	40	34	33	36	31	34	39	45	44	43	42	38	41	36	35
Yellowknife, N.W.T.	..	..	21	23	24	18	20	21	15	16	20	22	17	18	27	27
Total	1,483	2,374	3,404	3,368	3,132	2,523	2,360	2,101	1,908	2,056	2,144	2,151	2,250	2,300	2,053	1,850

Note: * These Towers became Flight Service Stations in 1991.

** In 1990, Buttonville became Toronto/Buttonville.

** In 1991, Mirabel International became Montréal/Mirabel Intl and Montréal International became Montréal/Dorval Intl.

Some totals may not add due to rounding.

Source: Statistics Canada/Transport Canada. TP 5/7.

The recession in the early 1980s was the first important event to negatively affect both itinerant and local movements. All airports were affected, the hardest hit being those with a large volume of general aviation activity.³² For instance, at St. Hubert (near Montréal), for many years one of the busiest airports in Canada in terms of total aircraft movements, local aircraft movements decreased from approximately 183 thousand in 1980 to 105 thousand in 1986 (see Table 6.2). At Toronto Island airport, local movements plummeted from 144 thousand in 1980 to just over 86 thousand in 1985. In the Prairies, declines were even more severe. At St. Andrews airport (near Winnipeg) local movements fell from 171 thousand in 1980 to 68 thousand in 1986. On the west coast, Pitt Meadows (near Vancouver) lost 78% of its 1980 local traffic by 1985. Some of this decline was due to the opening of Boundary Bay in 1983 while some was due to the decline in pilot training traffic. The majority of airports have never recovered the levels of local movements seen between 1975 and 1980.

The 1990s recession was equally drastic with total local movements decreasing an average of 11% in 1991 over 1990. Curiously however, 13 airports expanded, showing more local movements in 1991 than in 1990. These included increases of 38% at Sault Ste. Marie, 33% at Sudbury, 25% at Kamloops and others. Of note as well, eight airports saw local movement increases in 1991 over 1980. Fort McMurray, for example, topped the list with a 73% increase while Sudbury had one-third more local movements in 1991 than in 1980. Gander ranked third increasing 29%, followed by North Bay at 24% (see Table 6.2).

Although overall local movements declined between 1986 and 1991, some airports continued to grow in spite of the second economic downturn. Halifax, Sudbury and Boundary Bay doubled their local movements, for example, while Abbotsford increased by half this amount.

On average, there were about 40% fewer local movements recorded in 1991 compared to the late 1970s. There were just over two million local movements and about four million itinerant movements in 1991 (see Table 6.1).

Overall Itinerant Movements

Airports with itinerant traffic were similarly affected during the first recession in the 1980s, although not as severely as local movements.³³ Collectively, their recorded landings and take-offs dropped from four million in 1980 to three million in 1985. Indeed, 23 of the 61 airports surveyed recorded decreases in excess of 30% from 1980 to 1985. The most seriously affected were Fort St. John and Pitt Meadows, British Columbia, Grande Prairie, Alberta, St. Andrews, Manitoba and St. Jean, Quebec, all of which saw their itinerant movements drop over 50%. Though almost 45% of the airports recovered the level of movements recorded in 1980 by 1989, it took almost a decade to do so and was aided by the transfer of service to the smaller communities from the major air carriers to their families.

By 1986, itinerant movements increased as competitive services were introduced on routes which under regulation were served by only one carrier (see Table 6.3). The greater availability of attractive fares was partially responsible for the need to increase the frequency of service.³⁴ In fact, during this time, all but seven airports (Edmonton International, Fort McMurray, St. Catharines, Thompson, Toronto Island, Whitehorse and Yellowknife) showed increased itinerant movements. Growth in total movements continued until 1990.

³² These are airports specializing in general aviation activities, as opposed to regular, commercial air services.

³³ These are airports specializing in regular, commercial services.

³⁴ As a result of the 1984 Canadian Air Policy, airlines can now acquire any size of aircraft and offer a more frequent and competitive service.

Table 6.3

Itinerant Aircraft Movements at Airports with Air Traffic Control Towers, 1965, 1970, 1975, 1980-1992

Airports	1965	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
	('000)															
Abbotsford, B.C.	25	41	57	72	50	44	40	45	52	53	61	62	65	68	64	64
Baie Comeau, Que.	10	17	22	23	18	18	19	16	15	17	15	17	17	19	15	15
Boundary Bay, B.C.	"	"	"	"	"	"	13	37	42	45	52	56	68	73	85	80
Brandon, Man.*	6	15	34	21	20	18	16	16	15	15	14	15	17	17	17	15
Buttonville, Ont.**	"	36	73	69	64	60	61	60	63	67	70	83	91	76	65	65
Calgary International, Alta.	67	73	118	185	188	158	148	151	157	148	160	171	194	207	205	201
Castlegar, B.C.*	"	"	8	15	14	13	11	13	13	14	14	15	15	15	15	15
Charlottetown, P.E.I.	"	"	19	17	14	15	15	16	15	17	22	22	21	21	21	21
Edmonton International, Alta.	16	27	59	89	85	67	62	64	65	64	60	62	64	63	56	55
Edmonton Municipal, Alta.	59	81	130	188	176	140	128	126	126	122	118	118	128	132	121	116
Fort McMurray, Alta.	"	"	"	36	42	38	33	39	39	36	31	26	26	26	25	24
Fort St. John, B.C.	16	14	21	56	48	34	25	25	25	20	18	20	23	24	23	20
Fredericton, N.B.	18	25	31	33	32	27	25	28	24	22	25	24	29	30	29	30
Gander International, Nfld.	19	21	26	25	25	24	22	24	22	26	25	29	32	36	33	31
Goose Bay, Nfld.	"	"	"	24	26	27	28	29	29	32	36	36	36	36	36	31
Grande Prairie, Alta.	"	"	19	53	44	33	26	26	25	23	26	24	23	26	24	23
Halifax International, N.S.	29	38	41	56	57	55	47	55	56	60	70	83	93	93	88	91
Hamilton City, Ont.	1	39	63	66	54	49	41	40	39	38	42	49	51	52	49	43
Kamloops, B.C.	6	28	36	42	42	33	31	28	27	27	31	29	27	28	28	29
Kelowna, B.C.	"	"	31	40	40	32	29	28	31	33	35	35	33	37	39	42
Langley, B.C.	"	"	56	64	60	42	41	36	32	37	40	43	44	41	34	30
Lester B Pearson International, Ont.	100	177	229	250	246	235	235	253	283	301	314	348	354	322	328	328
Lethbridge, Alta.	8	15	24	26	28	25	21	22	21	19	22	24	25	22	19	19
London, Ont.	25	38	52	62	55	48	48	52	50	50	61	66	65	64	59	58
Mirabel International, Que.**	"	"	4	38	31	29	34	36	41	43	42	46	49	48	47	46
Moncton, N.B.	23	28	33	46	45	36	35	33	33	38	40	42	50	47	40	41
Montreal International, Que.**	107	152	188	173	168	156	149	156	152	160	175	203	231	214	197	197
North Bay, Ont.	12	28	31	41	37	38	32	33	32	33	37	39	36	33	34	32
Oshawa, Ont.	"	25	40	43	39	33	34	36	36	38	40	40	38	38	37	37
Ottawa International, Ont.	63	89	40	118	114	108	109	112	115	109	115	127	133	137	127	123
Penticton, B.C.	6	17	24	29	27	21	19	19	18	18	20	24	24	23	21	20

Note:

* These towers became Flight Service Stations in 1991.

** In 1990, Buttonville became Toronto/Buttonville

*** In 1991, Mirabel International became Montréal/Mirabel Int'l and Montréal International became Montréal/Dorval Int'l.

Some totals may not add due to rounding.

Source: Statistics Canada/Transport Canada: TP 577.

Table 6.3

Itinerant Aircraft Movements at Airports with Air Traffic Control Towers, 1965, 1970, 1975, 1980-1992 – Concluded

Airports	1965	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
('000)																
Pitt Meadows, B.C.	7	48	77	71	69	51	45	40	34	38	46	48	51	47	45	42
Prince George, B.C.	13	19	24	49	49	37	33	31	28	30	31	32	36	32	33	33
Québec, Que.	40	55	78	90	83	74	80	78	75	80	87	98	101	103	99	99
Regina, Sask.	29	33	54	62	65	57	55	54	51	51	53	57	58	55	54	54
Saint John, N.B.	16	16	26	22	20	19	17	17	19	19	23	26	28	24	23	25
Saskatoon, Sask.	20	31	57	67	69	56	54	57	57	53	55	61	63	61	56	59
Sault Ste. Marie, Ont.	..	8	22	28	27	23	23	23	24	26	28	32	31	29	31	37
Sept-Îles, Que.	14	23	34	44	46	39	35	36	27	26	29	31	33	31	34	33
Springbank, Alta.	..	12	50	57	61	48	41	35	36	35	36	34	36	41	43	36
St. Andrews, Man.	..	22	42	53	48	35	29	26	26	25	25	29	33	35	27	25
St. Catharines, Ont.*	..	..	23	31	29	24	23	20	19	19	17	15	15	16	..	..
St. Honoré, Que.	..	..	26	24	24	18	19	21	23	25	29	24	29	32	28	46
St. Hubert, Que.	..	87	96	107	88	80	82	67	64	60	62	66	74	89	79	70
St. Jean, Que.	..	10	31	32	33	19	16	16	19	17	18	19	19	24	26	22
St. John's, Nfld.	8	12	17	30	33	29	28	28	31	34	39	42	46	45	45	42
Sudbury, Ont.	..	..	28	31	31	27	26	27	28	28	37	47	52	50	55	51
Sydney, N.S.*	8	9	14	12	11	9	8	8	9	11	13	13	15	16	..	..
Thompson, Man.	..	..	35	26	28	26	25	28	31	30	35	36	34	29	29	28
Thunder Bay, Ont.	20	20	35	47	47	44	43	46	46	50	55	56	55	60	57	54
Toronto Island, Ont.	42	54	48	51	61	66	63	61	65	82	94	74	51	63	61	56
Val d'Or, Que.	..	..	16	25	25	20	17	14	14	16	19	18	20	21	18	17
Vancouver Harbour, B.C.	..	..	51	42	28	30	31	30	36	46	48	54	59	53	52	52
Vancouver International, B.C.	85	133	198	268	263	227	223	219	236	279	303	325	325	317	288	290
Victoria International, B.C.	32	51	91	100	103	95	94	103	106	115	123	129	127	123	113	114
Villeneuve, Alta.	..	..	..	33	31	27	24	22	21	22	20	17	22	22	19	16
Waterloo-Wellington, Ont.	..	28	36	46	35	30	28	28	26	27	31	31	38	54	50	47
Whitehorse, Y.T.	9	23	24	38	38	28	24	26	24	25	28	29	26	24	21	23
Windsor, Ont.	18	26	31	31	27	23	22	22	27	31	33	40	41	35	33	32
Winnipeg International, Man.	75	118	114	115	118	104	96	98	103	101	103	111	117	115	104	104
Yellowknife, N.W.T.	..	..	31	37	42	34	32	32	34	34	42	34	30	28	29	29
Total	1,114	1,890	2,994	3,697	3,569	3,067	2,912	2,966	3,031	3,144	3,366	3,536	3,706	3,759	3,488	3,416

Note: * These towers became Flight Service Stations in 1991.

** In 1990, Buttonville became Toronto/Buttonville

** In 1991, Mirabel International became Montréal/Mirabel and Montréal International became Montréal/Dorval Int'l.

Some totals may not add due to rounding.

Source: Statistics Canada/Transport Canada; TP 577.

The second recession did not have nearly the effect of the first in terms of itinerant movements with only four airports, St. Andrews, Langley, Toronto/Buttonville and Moncton showing decreases of 15% or greater in 1991 over 1990 (see Table 6.3).

Of the five busiest airports in terms of itinerant movements, Lester B. Pearson reported the largest number of movements in 1991 and the largest increase in passenger activity compared to 1980. Vancouver ranked second in terms of movements and had about an 8% increase in passenger activity. Calgary was the third busiest airport and Montréal International ranked fourth in terms of passenger activity. Calgary's movements increased 11% while Montréal International showed a 14% increase in movements in 1991 over 1980. Ottawa International airport ranked fifth and experienced an increase of about 8% during these 12 years.

Itinerant Movements by Sector

While itinerant movements increased by 96% between 1970 and 1980 (see Table 6.1) much of the increase involved domestic movements which accounted for roughly 90% of all itinerant movements. Domestic movements doubled from just under two million during the 1970s to over three million in 1980. Transborder (Canada-United States) and other international movements increased by 53% and 18%, respectively over this same period (see Figure 6.1).

October 7-17, 1920 – The first trans-Canada flight from Halifax to Vancouver was completed in 49 hrs. 7 min. flying time. (5)

Domestic movements were hardest hit in the early 1980s, falling 23% to under three million in 1983. The domestic sector showed a small recovery in 1984, however, by 1991, domestic movements have not

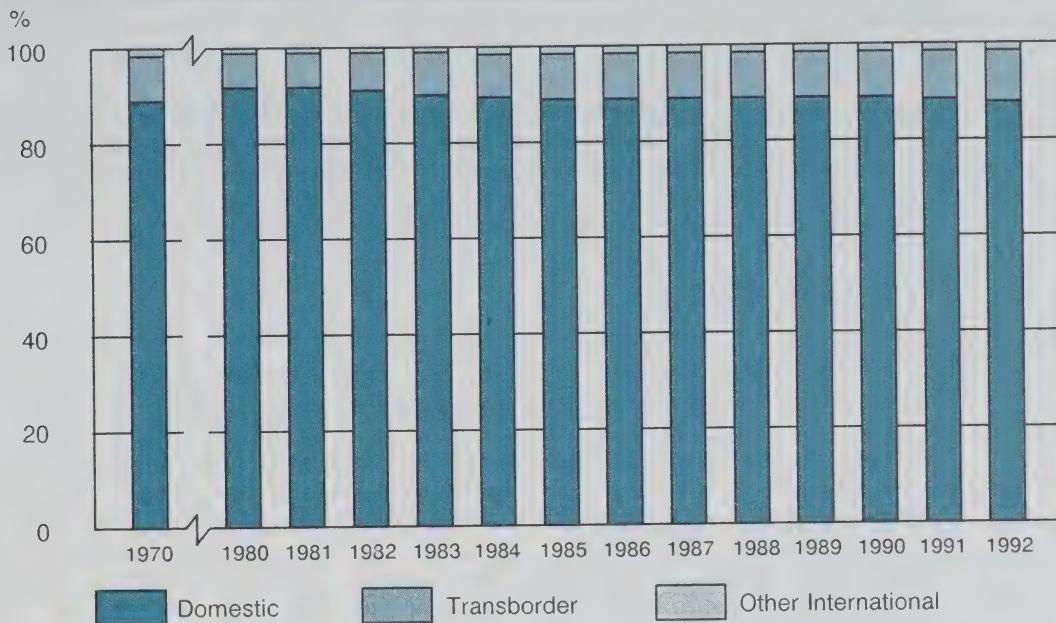
recovered the 1980 total. Collectively, transborder and other international movements increased by 33% from 1980 to 1991 after experiencing an initial drop in response to the 1980s recession. In spite of economic conditions, the transborder market increased steadily from 7% of all itinerant movements in 1980 to about 10% in 1991.

Itinerant Movements by Type of Operation

Itinerant movements consisted largely (46%) of commercial 'general' aviation movements (small charters and specialty) but only about 24% of scheduled and charter movements in 1980. This trend began to reverse from 1987 on, until today, when scheduled and charter movements outnumber general movements (see Figure 6.2). The decline in general commercial movements mostly affected the domestic sector.

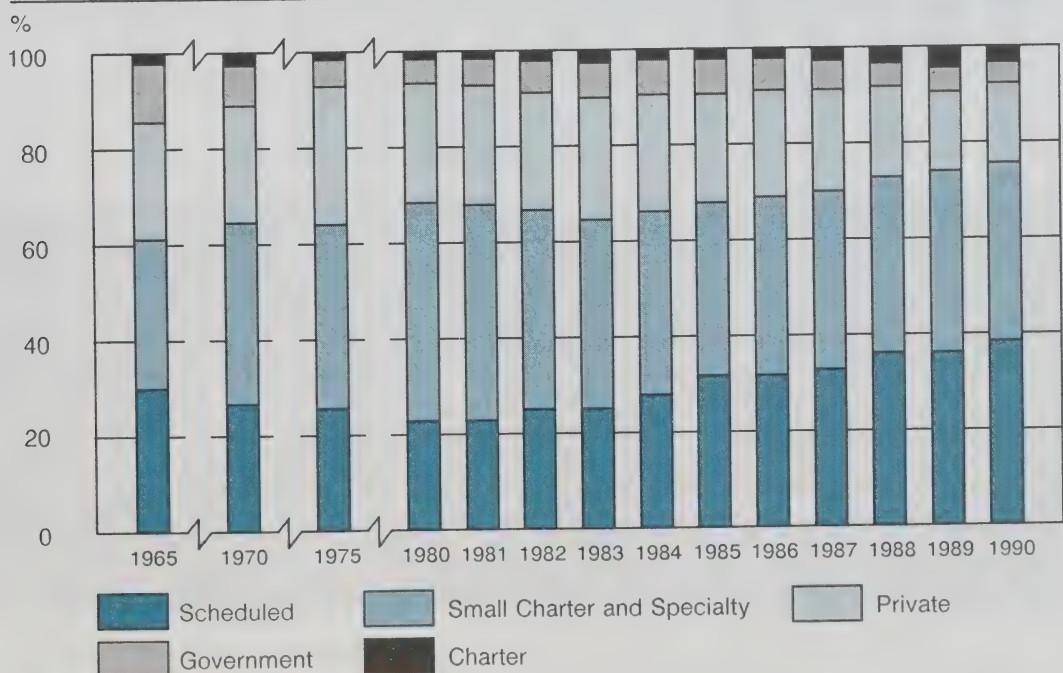
There was steady growth in the activities of all commercial operators and especially the smaller carriers in the 1970s. For example, a rise of 137% in itinerant movements was logged by these smaller carriers, from 718 thousand to just under two million from 1970 to 1980. The 1980s economy had a sustained impact however, on commercial general aviation movements. Activity hovered around the 1975 level of a million movements from 1983 to 1986 before increasing annually until 1990. Similarly, during the first recession the number of movements by larger carriers dropped slightly. These movements had recovered by 1985 and then increased annually to date.

Figure 6.1
Itinerant Movements, by Sector, 1970, 1980-1992



Source: Statistics Canada/Transport Canada: Annual Report TP 577.

Figure 6.2
Itinerant Movements, by Type of Operation, 1965, 1970, 1975, 1980-1990



Note: Data for 1991 and 1992 are not available by type of operation as the conceptual definitions have changed.

Source: Statistics Canada/Transport Canada: TP 577.

Private itinerant movements, which increased by just under 97% from 1970 to 1980, also experienced a continuous decrease coincident with the economic slowdown. The number of private movements fell to just over 688 thousand by 1986 for a nearly 25% decrease from the 1980 level. Although less dramatic, their numbers continued to decline to 1991.

For government aircraft, itinerant movements increased at a slow but steady pace throughout the period from 1965 to 1985. Government movements also showed a steady decline since 1987. They repeated the 1975 level of 173 thousand movements in 1990.

By Power Plant

Power plant refers, literally, to the type of propulsive power used by an aircraft. These types included piston, jet, turbo-prop, helicopter and glider.³⁵

Helicopter use increased rapidly in the 1970s, stimulated by developments in offshore oil projects and the James Bay Hydro Electric Project. Jet aircraft also assumed a major role at this time, taking over much of the medium and long range flights previously handled by turbo-prop aircraft. The number of itinerant movements during the 1970s thus increased by approximately 281% for helicopters and 106% for jets. Jet movements increased 5% between 1980 and 1990 while helicopter movements decreased 16%.

The recession in the early 1980s impacted strongly on the number of itinerant movements for all power plants and particularly piston engines (the primary power plant for private and general aviation). Piston aircraft experienced a 32% decrease in itinerant movements to 1985. Itinerant piston movements averaged 1.6 million movements annually from 1986 to 1990, dropping to 1.4 million movements in 1991.

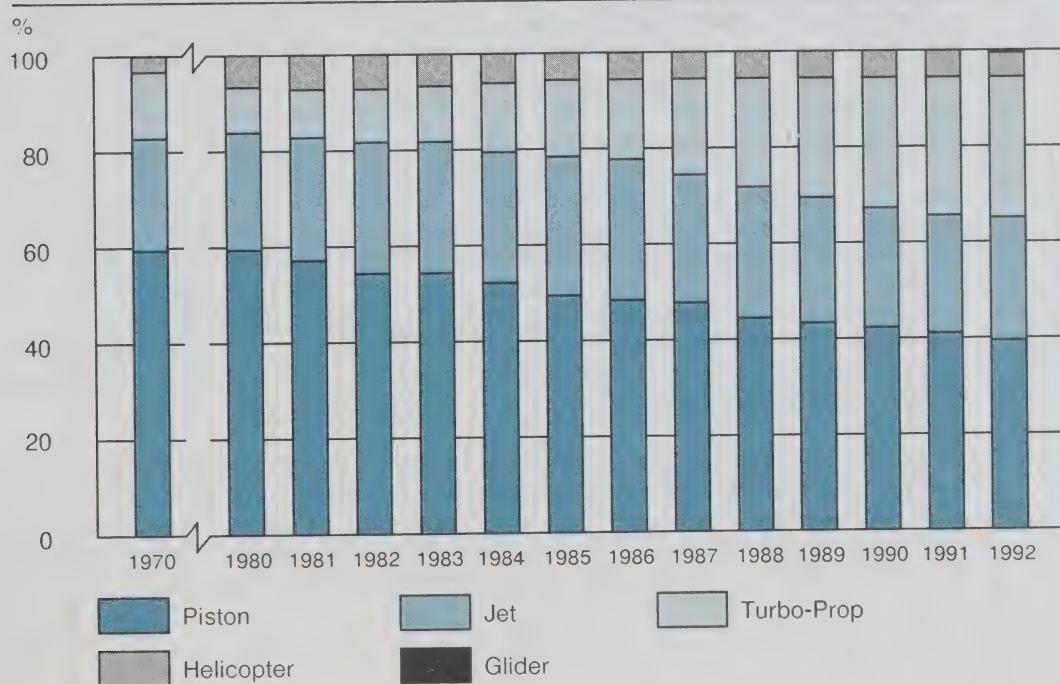
³⁵ The category, glider, included gliders, autogyros, balloons, airships, etc.



de Havilland Dash 7, de Havilland Canada

Turbo-props fared somewhat better increasing by 29% during the 1970s. After a decline during the recession, their itinerant movements increased 24% by 1984 over a pre-recession 1980 level. The rather quick revival in turbo-prop aircraft in the post-recession years, showed the preference by many carriers towards the use of a smaller, more appropriate aircraft on many of the shorter routes. This occurred while the major carriers were turning over their short-haul routes to the carriers in their newly acquired family. The smaller aircraft of the families offered more frequent service than the replaced jet service of the major carriers on low-density flights. The proportion of turbo-prop aircraft to all aircraft increased to 28% in 1991 from 9% seen in 1980. The large popularity of turbo-prop aircraft was reflected in the over 190% increase in their movements during this 1980 to 1991 period (see Figure 6.3).

Figure 6.3
Itinerant Movements by Power Plant, 1970, 1980-1992



Source: Statistics Canada/Transport Canada: TP 577.

Passenger Traffic at Canadian Airports

The provinces experienced some large increases in passenger volumes during the 1970s. These ranged from 70% in New Brunswick to a resounding 245% in Alberta between 1970 and 1980. Particularly noticeable was the surge of traffic through the country's western terminals. Ontario and British Columbia were still increasing their market share in terms of passenger traffic in the second half of the 1980s (see Tables 6.4 and 6.5).

June 5, 1918 - The Canadian Government agreed to establish air stations at Sydney and Halifax for anti-submarine operations at the suggestion of the British Admiralty. (5)

Growth rates of most airports began again in 1983. In about 1985, the commercial aviation sector had recaptured the ground it had lost. With increased consumer confidence, more and more people booked air travel. The number of passengers

enplaned and deplaned at Canadian airports reached its summit of 67 million in 1990, having shown a steady yearly increase since 1982. A decrease in air travel was then recorded in each province and territory compared to 1990, as the effects of the latest recession were felt. The major scheduled carriers, regional and local scheduled carriers and major charter carriers reported 61 million passengers in 1991, down 9% from the 1990 passenger levels (see Table 6.4).

Ontario airports accommodated more than 23 million passengers in 1991, representing over 38% of passengers enplaned and deplaned at Canadian airports and carried on scheduled and chartered services. Airports in British Columbia, the second largest in terms of number of passengers, served approximately half as many passengers as in Ontario, totalling under 12 million. Quebec and Alberta ranked third and fourth respectively, with about 16% and 13% of total passengers in 1991. Altogether, the three top provinces accounted for more than 73% of 1991 passenger traffic (see Table 6.5).

By far the busiest airport in Canada was Lester B. Pearson with about 30% of national traffic and over 80% of all passengers enplaned and deplaned at airports in Ontario in 1991. The second leading airport was Vancouver in 1991 with comparable figures of 15% of national traffic and 77% of traffic in British Columbia. Other leading airports were Montréal International, Calgary and Ottawa (see Table 6.6).

Table 6.4
Revenue Passengers (Enplaned and Deplaned) at Canadian Airports, by Province and Territory, for Scheduled and Charter Services, 1970, 1975, 1980-1992

Province and Territory	Airport	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 ^p
Passenger ('000)																
Newfoundland	Deer Lake	32	88	111	102	91	93	95	105	148	165	163	171	141	150	
	Gander International	85	154	179	166	135	115	129	130	115	125	124	115	101	101	
Goose Bay	-	6	13	21	-	10	11	54	57	71	80	89	91	83	84	
St. John's	226	387	535	528	493	454	491	524	549	627	702	696	686	613	622	
Wabush	44	129	97	93	90	74	74	76	81	68	80	71	66	63	56	
Other Airports	178	124	147	142	142	124	143	107	117	111	111	105	106	99	98	
Total	565	888	1,082	1,052	951	868	941	979	1,039	1,140	1,263	1,248	1,235	1,100	1,111	
Prince Edward Island	Charlottetown	83	169	187	185	159	136	162	158	161	187	207	210	204	179	192
Total	89	173	187	185	159	136	162	158	161	187	207	207	210	204	179	192
Nova Scotia	Halifax International	686	1,213	1,510	1,570	1,497	1,388	1,575	1,754	1,845	2,128	2,338	2,400	2,527	2,292	2,310
	Sydney	121	202	194	190	157	139	145	147	154	171	182	180	168	140	140
Other Airports	-	32	30	26	26	40	38	27	28	33	36	37	33	26	22	
Total	807	1,447	1,734	1,786	1,680	1,566	1,758	1,928	2,027	2,332	2,556	2,617	2,728	2,458	2,472	
New Brunswick	Fredericton	114	172	191	197	187	162	200	188	185	192	207	223	245	196	213
	Moncton	138	220	239	234	213	200	218	221	233	241	293	286	282	221	230
	Saint John	142	212	203	191	171	164	168	200	209	229	246	243	231	197	196
Other Airports	-	13	35	60	64	61	47	42	38	59	69	57	56	74	59	61
Total	407	639	693	686	632	573	627	647	686	731	803	808	832	673	700	
Quebec	Bagotville	73	110	119	112	87	79	91	87	93	82	96	122	119	90	80
	Baie Comeau	60	107	87	78	80	78	64	71	67	63	61	67	62	55	
	La Grande Rivière	-	-	-	1	1	1	2	1	17	20	25	40	53	63	59
	Montréal/Dorval	4,606	6,709	6,287	6,201	5,441	5,143	5,592	5,545	5,436	5,968	6,544	6,456	6,435	5,590	5,563
	Montréal/Mirabel	-	94	1,409	1,245	1,214	1,278	1,459	1,716	1,851	1,977	2,221	2,392	2,496	2,255	2,424
	Québec	278	538	623	629	557	535	620	633	660	715	759	734	684	681	
	Rouyn	25	59	88	79	72	71	79	114	86	88	109	107	98	87	77

Note: Some totals may not add due to rounding.

Sources: Statistics Canada: Catalogue No. 51-005 and Internal Reports.

Table 6.4

Revenue Passengers (Enplaned and Deplaned) at Canadian Airports, by Province and Territory, for Scheduled and Charter Services, 1970, 1975, 1975, 1980-1992 - Continued

Province and Territory	Airport	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Passengers ('000)																
Quebec (Cont.)	Sept-Îles Val d'Or	110	234	220	168	150	157	150	139	123	154	141	141	140	116	
		28	79	117	164	129	134	155	134	105	108	113	115	113	95	87
Other Airports	Total	169	395	428	375	328	532	587	392	618	378	409	435	403	378	371
Ontario	Lester B. Pearson International	5,349	8,325	9,388	9,104	8,077	8,001	8,806	8,860	9,072	9,442	10,447	10,634	10,659	9,444	9,513
	London	6,447	10,613	14,528	14,537	13,571	14,717	15,839	17,122	18,347	20,273	20,424	18,495	19,119		
	Ottawa International	1,68	242	197	181	166	144	202	249	258	285	256	241	232	234	258
	Sault Ste Marie	887	1,513	1,950	1,916	1,886	1,877	2,106	2,272	2,262	2,437	2,711	2,636	2,698	2,421	2,496
	Sudbury	97	169	217	211	171	166	186	211	231	226	224	199	196	171	160
	Thunder Bay	107	200	252	234	185	166	179	204	200	216	237	220	230	221	207
	Timmins	191	336	473	454	404	385	439	492	520	547	592	527	545	506	496
	Windsor	64	110	165	163	142	131	148	158	176	179	192	184	180	166	160
	Other Airports	36	159	668	710	502	952	1,165	733	892	1,057	1,047	1,063	1,064	834	800
	Total	8,232	13,677	18,780	18,703	17,209	17,585	19,342	20,412	21,933	23,572	25,815	25,565	25,757	23,202	23,847
Manitoba	Thompson	64	102	98	97	85	89	72	-	94	97	110	98	95	91	95
	Winnipeg International	1,273	1,990	2,414	2,375	2,085	2,005	2,116	2,150	2,267	2,227	2,460	2,314	2,254	2,073	2,142
	Other Airports	141	258	185	231	225	319	337	307	226	242	241	220	232	208	224
	Total	1,477	2,351	2,696	2,703	2,395	2,413	2,525	2,457	2,587	2,566	2,811	2,632	2,581	2,372	2,461
Saskatchewan	Regina	274	529	650	649	606	592	641	658	674	597	654	625	627	557	579
	Saskatoon	231	460	641	644	594	572	636	660	661	595	643	620	628	562	571
	Other Airports	50	94	63	55	41	93	114	21	22	39	38	42	57	55	50
	Total	554	1,083	1,354	1,348	1,241	1,257	1,391	1,339	1,357	1,231	1,335	1,287	1,312	1,174	1,200
Alberta	Calgary International	1,265	2,385	4,237	4,509	4,039	3,767	3,856	3,910	3,998	4,056	4,550	4,475	4,614	4,574	4,675
	Edmonton International	633	1,452	2,441	2,399	2,139	1,953	1,991	2,002	2,055	1,928	2,072	1,989	2,015	1,810	1,791

Note: Some totals may not add due to rounding.

Sources: Statistics Canada: Catalogue No. 51-005 and Internal Reports.

Table 6.4

Revenue Passengers (Enplaned and Deplaned) at Canadian Airports, by Province and Territory, for Scheduled and Charter Services, 1970, 1975, 1980-1992 – Concluded

Province and Territory	Airport	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 ^p
Passengers ('000)																
Alberta (Cont.)																
	Edmonton Municipal	375	658	950	1,018	856	800	835	918	899	848	965	1,030	1,007	923	872
	Grande Prairie	–	11	172	152	59	58	64	96	92	104	103	103	105	94	83
	Other Airports	91	248	356	292	398	554	628	336	231	299	316	338	353	270	242
	Total	2,364	4,754	8,156	8,370	7,491	7,132	7,374	7,262	7,275	8,235	8,006	7,935	8,094	7,671	7,663
British Columbia																
	Cranbrook	52	81	121	134	114	98	94	97	90	84	90	94	99	83	86
	Fort St. John	107	149	260	256	186	141	139	143	134	124	137	142	137	101	75
	Kamloops	68	165	245	245	171	152	153	170	167	139	138	131	129	112	111
	Kelowna	84	251	402	422	385	338	375	466	445	397	395	387	392	302	284
	Nanaimo	19	45	43	–	20	31	36	92	81	75	133	124	114	96	91
	Penticton	44	95	117	116	92	83	91	95	92	87	85	86	85	69	70
	Prince George	113	227	342	337	260	222	221	228	221	225	275	270	286	235	235
	Prince Rupert	88	130	206	191	158	147	116	117	110	110	131	120	117	105	113
	Terrace	48	73	113	112	87	81	74	75	79	76	90	97	105	87	83
	Vancouver Harbour	29	–	157	134	–	76	74	78	78	109	140	155	171	169	165
	Vancouver International	2,690	4,724	7,079	7,131	6,360	6,371	6,766	7,019	8,415	7,824	8,840	9,144	9,544	8,996	9,443
	Victoria Harbour	8	–	93	75	–	62	60	65	72	110	135	159	166	148	140
	Victoria International	268	440	608	607	555	522	586	635	649	668	760	741	758	667	697
	Other Airports	336	882	962	893	790	945	1,365	568	551	614	673	654	654	542	556
	Total	3,954	7,262	10,748	10,653	9,178	9,269	10,150	9,848	11,184	10,642	12,022	12,304	12,757	11,712	12,149
Yukon Territory																
	Whitehorse	78	107	164	182	122	101	103	99	105	105	124	123	127	110	122
	Other Airports	19	33	49	53	30	37	37	19	15	15	16	17	20	17	27
	Total	97	140	213	235	153	138	140	118	120	120	140	140	147	127	149
Northwest Territories																
	Yellowknife	47	95	120	129	125	123	136	144	151	164	192	192	212	211	197
	Other Airports	105	201	231	302	307	264	379	359	347	372	419	430	410	393	375
	Total	152	296	350	431	432	487	515	502	498	536	611	642	621	590	566
Canada																
	Other Airports	1,138	2,461	3,179	3,143	2,850	3,907	4,835	2,907	3,106	3,229	3,363	3,397	3,406	2,881	2,826
	Total	24,047	41,033	55,381	55,265	49,071	49,426	53,732	54,514	57,947	59,734	66,015	66,021	66,928	60,702	62,023

Note: Some totals may not add due to rounding.

Sources: Statistics Canada: Catalogue No. 51-005 and Internal Reports.

Table 6.5

Passenger Traffic at Canadian Airports, Market Share, by Province and Territory 1970, 1980, 1984-1992

Province	1970	1980	1984	1985	1986	1987	1988	1989	1990	1991	1992p
	%										
Newfoundland	1.9	1.9	1.7	1.8	1.8	1.9	1.9	1.8	1.8	1.8	1.8
P.E.I.	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Nova Scotia	3.5	3.3	3.5	3.5	3.5	3.9	3.9	4.0	4.1	4.1	4.0
New Brunswick	1.7	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1
Quebec	22.8	17.4	17.0	16.2	15.6	15.8	15.8	16.1	15.9	15.6	15.3
Ontario	35.4	34.6	37.0	37.5	37.9	39.5	39.1	38.7	38.5	38.2	38.4
Manitoba	5.8	4.8	4.5	4.5	4.5	4.3	4.3	4.0	3.9	3.9	4.0
Saskatchewan	2.2	2.5	2.6	2.4	2.3	2.1	2.0	1.9	2.0	1.9	1.9
Alberta	10.0	14.9	13.9	13.3	12.7	12.1	12.1	12.0	12.1	12.6	12.5
British Columbia	15.8	18.5	17.8	18.0	19.2	17.8	18.2	18.6	19.1	19.3	19.6
N.W.T.	0.2	0.2	0.3	0.9	0.9	0.9	0.9	1.0	0.9	1.0	0.9
Yukon	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Statistics Canada; Catalogue Nos. 51-005, 51-203, 51-207 and Internal Reports.

Table 6.6

Passenger Traffic (Enplaned and Deplaned Revenue Passengers) at the Top 10 Canadian Airports, for Major Scheduled, Regional and Local Scheduled and Major Charter Services, by Category and Sector, 1970, 1975, 1975, 1980-1992

Airport	Category and Sector	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992P
('000)																
Calgary International	Major Scheduled	1,203	2,218	3,908	4,119	3,640	3,366	3,459	3,509	3,637	3,692	4,134	3,794	3,850	3,513	3,493
	Regional and Local Scheduled	22	102	140	161	139	108	131	154	188	244	283	542	611	828	967
	Major Charter	40	65	189	230	260	294	278	248	173	120	133	139	153	233	215
Domestic	Transborder	1,096	2,003	3,343	3,580	3,179	2,924	3,087	3,176	3,225	3,161	3,545	3,505	3,583	3,555	3,578
Other International	Total	127	315	771	794	716	684	638	606	647	737	826	798	864	833	880
Edmonton International	Major Scheduled	585	1,367	2,279	2,243	1,965	1,756	1,790	1,786	1,899	1,803	1,913	1,797	1,868	1,624	1,585
	Regional and Local Scheduled	—	—	—	—	7	—	—	—	3	10	30	51	54	55	51
	Major Charter	48	85	162	156	167	197	201	235	147	95	109	139	93	136	155
Domestic	Transborder	573	1,283	2,044	1,953	1,767	1,638	1,751	1,784	1,794	1,658	1,802	1,655	1,697	1,489	1,470
Other International	Total	9	93	277	331	264	220	157	134	199	200	205	241	248	250	257
Edmonton Municipal	Major Scheduled	367	607	888	917	756	695	704	724	662	639	677	542	496	421	379
	Regional and Local Scheduled	8	51	61	100	98	104	136	192	236	208	289	488	509	501	492
	Major Charter	—	1	1	1	2	1	1	1	1	2	—	—	2	—	—
Domestic	Transborder	375	658	949	1,018	855	800	841	918	899	848	965	1,030	1,006	923	872
Other International	Total	—	—	1	1	—	1	1	—	—	—	—	—	1	—	—
Halifax International	Major Scheduled	682	1,189	1,473	1,537	1,459	1,331	1,534	1,697	1,644	1,638	1,725	1,573	1,486	1,373	1,327
	Regional and Local Scheduled	—	—	4	5	12	10	10	10	173	464	584	791	977	864	921
	Major Charter	4	24	33	28	27	47	40	47	28	27	30	36	64	55	62
Domestic	Transborder	599	1,067	1,380	1,455	1,398	1,291	1,474	1,617	1,719	1,970	2,167	2,190	2,284	2,067	2,088
Other International	Total	62	85	71	51	39	42	60	62	59	96	104	139	164	159	150
		26	61	60	65	61	56	49	75	67	63	67	71	80	67	72
		686	1,213	1,510	1,570	1,497	1,388	1,583	1,754	1,845	2,129	2,338	2,400	2,527	2,292	2,310

Note: From 1970 to 1983, data for Regional and Local Scheduled Services may be slightly understated.

Some totals may not add due to rounding.

Sources: Statistics Canada. Catalogue Nos. 51-005, 51-203, 51-207 and Internal Reports.

Table 6.6

Passenger Traffic (Enplaned and Deplaned Revenue Passengers) at the Top 10 Canadian Airports, for Major Scheduled, Regional and Local Scheduled and Major Charter Services, by Category and Sector, 1970, 1975, 1980-1992 – Continued

Airport	Category and Sector	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 ^p
(‘000)																
Lester B. Pearson International	Major Scheduled	5,966	9,393	12,958	12,862	11,689	11,477	12,535	13,112	14,572	15,389	16,760	15,901	15,807	14,693	15,192
	Regional and Local Scheduled	32	100	267	277	250	215	256	459	493	664	948	1,269	1,603	1,194	1,155
	Major Charter	450	1,121	1,304	1,398	1,578	1,877	1,931	2,268	2,056	2,294	2,565	3,094	3,014	2,608	2,772
Domestic	3,630	6,083	8,096	8,291	7,567	7,510	8,202	8,735	9,353	9,545	10,671	10,002	10,069	9,107	9,217	
Transborder	1,926	2,821	4,572	4,545	4,229	4,164	4,440	4,634	5,041	5,484	6,013	6,310	6,456	5,862	6,131	
Other International	891	1,709	1,860	1,702	1,720	1,896	2,081	2,471	2,727	3,319	3,589	3,952	3,899	3,526	3,770	
Total	6,447	10,613	14,528	14,537	13,517	13,571	14,722	15,840	17,122	18,347	20,273	20,264	20,424	18,495	19,119	
Mirabel International	Major Scheduled	–	71	1,105	1,045	1,013	1,052	1,118	1,270	1,331	1,320	1,342	1,340	1,265	1,373	
	Regional and Local Scheduled	–	–	18	27	29	35	40	36	46	49	57	48	28	29	
	Major Charter	–	23	286	173	172	191	308	410	482	624	853	993	1,108	962	1,022
Domestic	–	10	124	98	90	98	126	112	128	140	134	117	127	82	96	
Transborder	–	4	110	69	38	34	35	35	304	132	195	220	218	222	232	
Other International	–	80	1,174	1,078	1,086	1,147	1,295	1,447	1,417	1,705	1,893	2,055	2,151	1,951	2,096	
Total	–	94	1,409	1,245	1,214	1,278	1,467	1,716	1,849	1,976	2,221	2,392	2,496	2,255	2,424	
Montréal International (Dorval)	Major Scheduled	4,516	6,377	6,164	5,963	5,136	4,847	5,291	5,221	5,182	5,108	5,475	4,973	4,617	4,218	4,206
	Regional and Local Scheduled	–	4	11	16	33	49	56	108	268	635	820	1,213	1,533	1,153	1,046
	Major Charter	90	328	111	223	273	247	264	216	227	227	250	270	285	220	312
Domestic	2,627	3,958	4,204	4,075	3,416	3,269	3,594	3,635	3,740	3,759	4,261	4,229	4,101	3,476	3,409	
Transborder	1,176	1,576	2,080	2,124	2,025	1,873	2,016	1,909	1,936	2,079	2,282	2,226	2,333	2,115	2,454	
Other International	803	1,176	3	3	–	–	1	1	1	1	1	1	1	–	–	
Total	4,606	6,709	6,287	6,201	5,441	5,143	5,611	5,545	5,677	5,969	6,544	6,456	6,435	5,591	5,563	
Ottawa International	Major Scheduled	878	1,493	1,874	1,835	1,760	1,753	1,939	1,935	1,888	1,930	2,309	2,158	2,064	1,848	1,899
	Regional and Local Scheduled	–	3	41	50	88	83	138	301	359	481	349	450	581	522	505
	Major Charter	10	17	35	32	39	41	29	36	16	26	28	53	50	92	
Domestic	857	1,465	1,856	1,809	1,727	1,709	1,921	2,032	2,066	2,174	2,412	2,389	2,372	2,108	2,149	
Transborder	24	33	72	87	136	145	170	216	178	240	253	240	295	265	284	
Other International	7	16	22	20	23	24	15	24	19	24	19	6	31	48	63	
Total	887	1,513	1,950	1,916	1,886	1,877	2,106	2,272	2,263	2,437	2,684	2,635	2,698	2,421	2,496	

Note:

From 1970 to 1983, data for Regional and Local Scheduled Services may be slightly understated.

Some totals may not add due to rounding.

Sources: Statistics Canada: Catalogue Nos. 51-005, 51-203, 51-207 and Internal Reports.

Table 6.6

Passenger Traffic (Enplaned and Deplaned Revenue Passengers) at the Top 10 Canadian Airports, for Major Scheduled, Regional and Local Scheduled and Major Charter Services, by Category and Sector, 1970, 1975, 1980-1992 – Concluded

Airport	Category and Sector	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Passengers ('000)																
Major Scheduled																
Regional and Local Scheduled																
Vancouver International		2,520	4,465	6,492	6,509	5,548	5,498	5,739	5,750	6,928	6,332	6,920	6,878	6,988	6,614	6,995
Major Charter		38	47	96	85	150	225	448	601	974	1,098	1,550	1,822	1,991	1,815	1,811
Domestic		1,26	213	491	537	661	648	582	668	513	394	370	443	565	567	637
Transborder		1,912	3,416	5,048	5,068	4,438	4,353	4,662	4,937	5,838	5,298	6,046	6,053	6,043	5,571	5,650
Other International		599	994	1,576	1,600	1,463	1,474	1,572	1,528	1,950	1,839	1,956	2,138	2,383	2,167	2,293
Total		2,685	4,724	7,079	7,131	6,360	6,371	6,769	7,018	8,415	7,824	8,840	9,144	9,544	8,996	9,443
Winnipeg International																
Major Scheduled																
Regional and Local Scheduled																
Major Charter		18	13	45	59	68	65	71	91	102	129	174	206	249	317	379
Domestic		22	46	72	74	91	68	92	92	97	90	91	93	113	126	180
Transborder		1,137	1,702	2,048	2,019	1,762	1,687	1,772	1,802	1,936	2,133	1,988	1,910	1,756	1,805	
Other International		108	227	311	303	273	274	298	305	309	295	293	298	314	288	304
Total		1,273	1,990	2,414	2,375	2,085	2,005	2,117	2,151	2,267	2,226	2,460	2,315	2,255	2,073	2,142
Total Top 10 Airports																
Major Scheduled																
Regional and Local Scheduled																
Major Charter		118	319	682	780	872	894	1,286	1,955	2,839	3,999	5,097	6,892	8,157	7,272	7,356
Domestic		790	1,923	2,684	2,853	3,269	3,611	3,726	4,221	3,740	3,899	4,427	5,235	5,450	4,957	5,447
Transborder		12,805	21,644	29,090	29,364	26,199	25,278	27,440	28,748	30,698	30,456	34,136	33,158	33,192	30,134	30,334
Other International		4,030	6,147	9,840	9,904	9,183	8,910	9,387	9,551	10,623	11,232	12,127	12,610	13,276	12,161	12,985
Total		18,856	31,351	42,803	42,903	39,034	38,152	41,077	43,148	46,390	47,740	52,947	53,101	54,015	49,330	50,835

Note: From 1970 to 1983, data for Regional and Local Scheduled Services may be slightly understated.

Some totals may not add due to rounding.

Sources: Statistics Canada: Catalogue Nos. 51-005, 51-203, 51-207 and Internal Reports.

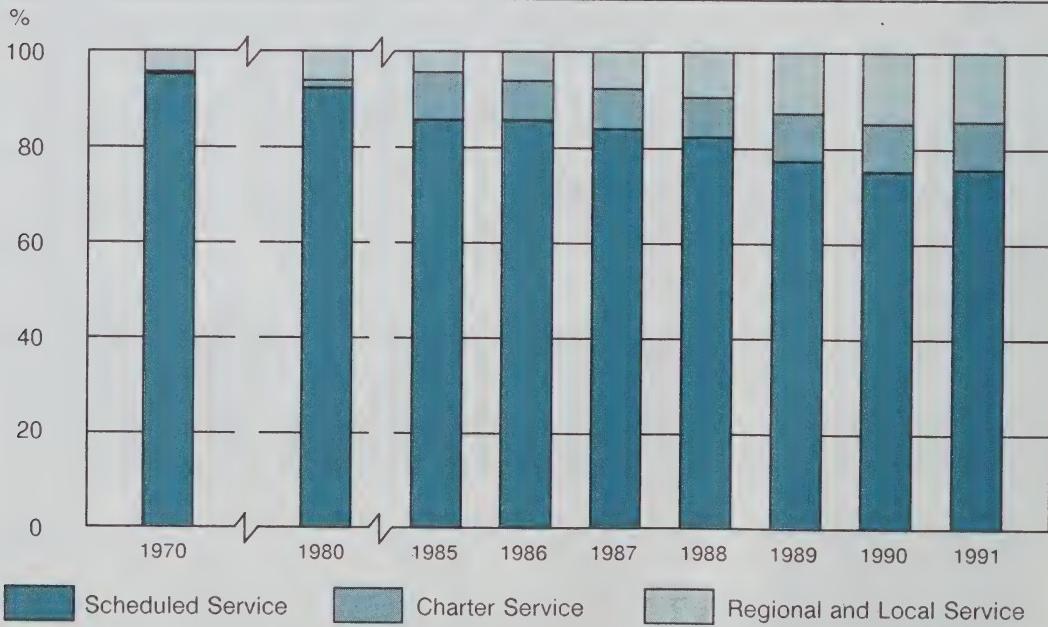
Passenger Traffic at the Top 10 Airports

Since about 80% of all airport activity took place in the top 10 airports, they were considered separately. Passenger traffic at these airports increased dramatically, from 1970 with just under 19 million to 1980 with about 43 million. Traffic declined by about 11% however, between 1980 and 1983. The hardest hit of these airports was Edmonton International which experienced a 20% reduction in traffic volume. Ottawa with about a 4% decline, had a better outcome than the other top 10 airports. A year later, however, passenger traffic exceeded 1983 levels at all airports with gains ranging from approximately 2% at Edmonton International to 15% at Mirabel. The number of passengers at the top 10 airports surpassed the 1980 level by 1985 and continued to increase to a height of 54 million passengers in 1990. The largest increases between 1985 and 1990, were seen at Mirabel (46%), Halifax (44%) and Lester B. Pearson (29%) (see Table 6.6).

Passenger Traffic by Category of Service at the Top 10 Airports

About 95% of all passengers travelling at the top 10 airports on commercial air services flew on scheduled services in 1970. The proportion of scheduled services to total services dropped by ten percentage points in each of the next two decades, registering about 75% in 1990 and 1991. An increasing trend in favour of regional and local and charter services began in the 1980s. The market shares for these services in 1991 represented 10% and 15% of passenger volume, respectively (see Figure 6.4).

Figure 6.4
Passenger Traffic at the Top 10 Canadian Airports, Market Share
by Category of Service, 1970, 1980, 1985-1991



Sources: Statistics Canada: Catalogue Nos. 51-005, 51-203, 51-207 and Internal Reports.

This was the result of several factors. As previously noted, regional and local carriers increased their market share by offering many of the services previously performed by the major carriers. Regional carriers also gained an advantage with the removal of certain licence restrictions and entry barriers as part of the 1984 Canadian Air Policy.

Charter carriers benefitted from the new air policies as well, especially from the increased liberalization of entry requirements. In terms of domestic and international charter passengers combined, Lester B. Pearson was Canada's busiest airport in 1991, followed by Montréal/Mirabel and Vancouver.

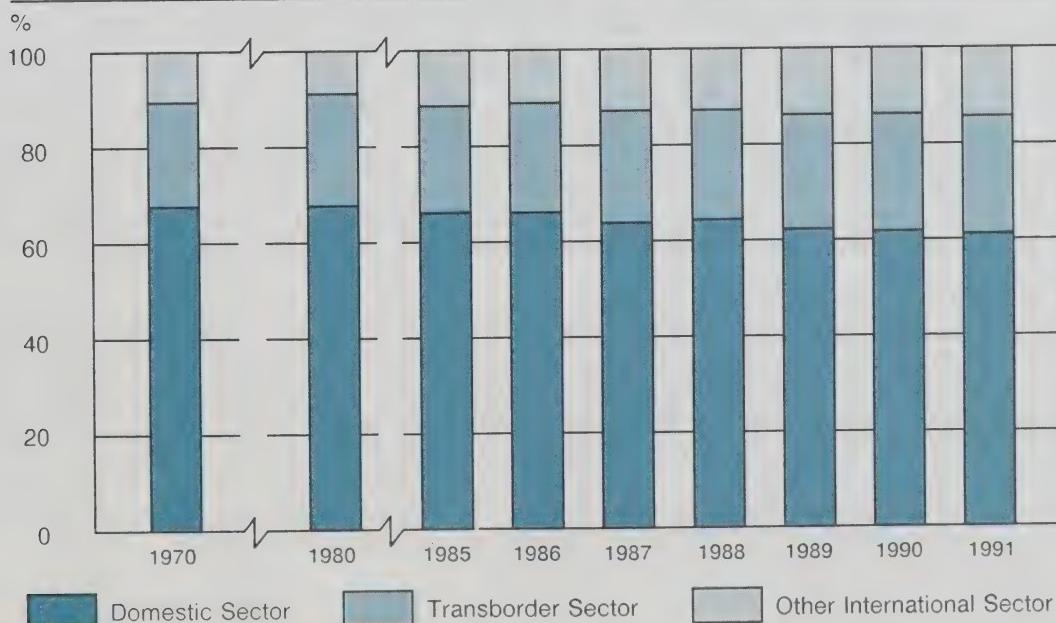
All airports witnessed an impressive growth in each category of service since 1970. The number of passengers travelling on scheduled services more than doubled, from 18 million in 1970 to 37 million in 1991. The charter market increased over six times in this same period, from 800 thousand passengers to almost five million. The number of passengers travelling on regional and local services went from 118 thousand to over seven million passengers during this time.

The airports that experienced most of the increase in scheduled services were Calgary with 192% and Edmonton International with 178%. The airports that contributed most to regional and local services were Edmonton Municipal and Vancouver, while for charter services, Halifax and Calgary led the way (see Table 6.6).

Passenger Traffic by Sector at the Top 10 Airports

The domestic sector averaged about 65% of total passenger demand through the years, compared to 23% and 12%, respectively for transborder (Canadian-United States) and other international sectors (see Figure 6.5).

Figure 6.5
Passenger Traffic at the Top 10 Canadian Airports, Market Share by Sector,
1970, 1980, 1985-1991



Sources: Statistics Canada: Catalogue Nos. 51-005, 51-203, 51-207 and Internal Reports.

The proportion of domestic sector passenger activity, in general, declined slightly since 1980, with the transborder and the other international sectors increasing in market share traffic. Traffic in the domestic sector more than doubled in absolute numbers between 1970 and 1991, increasing from around 13 million to about 30 million. All airports were predominantly domestic in 1991, except for Mirabel where domestic traffic accounted for only 4% of total traffic. Although, Vancouver and Lester B. Pearson also handled transborder and other international flights, domestic traffic still accounted for approximately 62% and 49% of total traffic, respectively.

Passenger traffic flows between the ten major Canadian airports and destinations in Europe, the Caribbean, the Orient, Mexico, and Central and South America went from approximately two million to seven million from 1970 to 1991. The three focal points for international travel other than to the United States in 1991 were Lester B. Pearson, Mirabel and Vancouver, handling almost 95% of international travellers.

The transborder sector experienced a significant decline during the early 1980s partly as a result of the general economic downturn and the lower value of the Canadian dollar compared to the U.S. dollar at that time (see Table 7.11). Traffic across the Canada-United States border, however, enjoyed the greatest growth overall, increasing from four million passengers in 1970 to 12 million in 1991 (see Table 6.6). In the transborder sector, terminals at Lester B. Pearson, Vancouver and Montréal International together accounted for more than 80% of Canadian passenger traffic volume.

Air Traffic Controllers

Air traffic controllers are often a part of the discussion about the increasing traffic at Canadian airports. As previously noted, there was a decline in the number of air traffic controllers since 1983 which was in the process of being rectified by Transport Canada in 1991, through increased training and hiring (see Table 4.6 and Chapter 8).

Cargo Traffic at the Top 10 Canadian Airports

Although air cargo contributed less than 1% of all cargo transport in Canada, there was growth in this area. Air cargo tended to be used for high value, low weight products. Except for 1982 and 1991, when most transportation activities declined, and in 1986, cargo shipments increased steadily, expanding at all leading airports. The decline in cargo shipments in 1986 was probably due to the large increase in the cost of fuel in that year which would have been reflected in air freight charges.

Cargo traffic at the top 10 airports increased from 258 thousand to 675 thousand metric tonnes from 1970 to 1991, a 162% increase, as carriers began actively developing markets for air cargo. Their efforts were supported by a demand from the high technology industries, from industries that produce perishable products such as live lobster from the Maritimes and flowers and fruit in Ontario and, from other emerging markets such as electronic goods that rely on fast transportation methods. Regulatory reform also had a favourable impact, with activity in the cargo area having fewer restraints (see Table 6.7). The exception was Montréal International (Dorval) which lost its international services to Mirabel in 1975.

Table 6.7

Cargo Traffic (Enplaned and Deplaned) at the Top 10 Canadian Airports, for Major Scheduled and Major International Charter Services, by Category and Sector, 1970, 1975, 1980-1992

Airport	Category and Sector	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 P
(metric tonnes)																
Calgary International																
Major Scheduled	7 935	14 039	23 126	26 007	27 591	29 839	35 037	31 374	25 861	26 025	30 700	38 642	40 972	41 116	40 457	
Major Charter	..	462	219	250	158	190	66	1 081	814	266	650	588	286	385	1 291	
Domestic	6 645	11 919	19 011	21 144	22 799	24 337	29 201	27 458	21 195	20 748	24 532	32 859	31 030	30 339	28 733	
Transborder	1 275	2 035	3 734	4 038	5 545	3 423	3 211	2 625	2 735	2 256	2 981	2 671	5 147	5 395	5 451	
Other International	15	547	600	1 075	1 405	2 269	2 681	2 373	2 745	3 286	3 837	3 701	5 080	5 787	7 560	
Total	7 935	14 501	23 345	26 257	27 749	30 029	35 103	32 455	26 675	26 291	31 350	39 230	41 256	41 501	41 747	
Edmonton International																
Major Scheduled	6 859	17 248	28 005	24 923	24 953	27 394	28 595	35 232	28 901	24 176	22 730	28 910	28 560	22 386	18 037	
Major Charter	..	300	180	2 093	1 978	761	166	939	745	649	813	391	83	94	86	
Domestic	6 804	16 515	25 529	21 954	22 535	25 625	26 332	33 818	27 476	21 528	20 965	26 285	25 764	19 436	15 535	
Transborder	594	2 085	2 271	1 616	646	639	630	872	1 110	1 226	903	945	1 039	920		
Other International	55	439	571	2 791	2 780	1 884	1 730	1 724	1 297	2 188	1 350	2 113	1 934	2 006	1 686	
Total	6 859	17 548	28 185	27 016	26 331	28 155	28 761	36 171	29 645	24 825	23 542	29 301	28 643	22 481	18 123	
Halifax International																
Major Scheduled	6 832	11 255	12 408	16 125	14 472	14 625	18 261	18 621	18 362	20 347	22 253	26 979	26 707	25 036	21 226	
Major Charter	..	164	92	19	90	—	175	423	271	291	58	172	401	563	319	
Domestic	6 256	10 658	11 768	15 345	13 857	13 854	17 011	17 250	16 577	17 974	19 471	23 970	22 685	21 161	17 649	
Transborder	402	394	142	106	21	34	59	116	123	259	117	171	185	180	187	
Other International	164	367	590	633	684	737	1 366	1 678	1 933	2 404	2 724	3 011	4 239	4 257	3 507	
Total	6 832	11 419	12 500	16 144	14 562	14 625	18 436	19 043	18 633	20 638	22 311	27 151	27 108	25 598	21 545	
Lester B. Pearson International																
Major Scheduled	84 759	129 100	172 952	170 565	167 618	184 669	216 592	218 448	206 801	225 058	257 619	291 164	313 064	288 911	291 538	
Major Charter	..	2 444	5 632	5 235	10 275	4 813	3 624	11 934	12 445	18 131	19 505	21 295	14 418	12 981	8 401	
Domestic	54 808	72 547	100 483	101 838	105 734	116 290	125 851	124 931	109 759	115 549	124 150	151 773	151 547	138 541	130 217	
Transborder	21 823	35 509	42 612	41 509	37 019	37 457	41 313	44 711	40 644	40 010	59 375	65 752	67 868	69 936	64 122	
Other International	8 128	23 488	35 489	32 453	35 140	35 735	53 052	60 739	68 843	78 631	93 600	94 923	108 067	103 416	105 600	
Total	84 759	131 544	178 584	175 800	177 883	189 482	220 216	230 382	219 246	243 189	277 125	312 459	327 482	311 892	299 839	

Note: Some totals may not add due to rounding.

Sources: Statistics Canada; Catalogue Nos. 51-005, 51-203, 51-207.

**Table 6.7
Cargo Traffic (Enplaned and Deplaned) at the Top 10 Canadian Airports, for Major Scheduled and Major International Charter Services, by Category and Sector, 1970, 1975, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992^a**

Airport	Category and Sector	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 ^b
(metric tonnes)																
Mirabel International	Major Scheduled	4 359	69 051	65 066	62 348	70 738	78 038	79 883	75 376	74 591	98 375	90 970	87 926	85 150	87 076	
	Major Charter	438	358	780	620	683	4 889	2 620	5 133	6 100	2 619	2 859	1 765	673	792	
Domestic		1 134	23 413	19 955	17 692	20 667	22 659	22 682	16 567	13 684	14 692	12 109	10 778	9 534	11 894	
Transborder		366	5 448	3 957	3 454	3 323	2 403	2 687	3 867	7 019	10 876	9 639	8 349	10 814	10 611	
Other International		..	3 297	40 548	41 834	41 822	47 431	57 875	57 134	60 075	59 989	70 425	72 081	70 565	65 477	65 363
Total	..	4 797	69 409	65 846	62 968	71 421	82 937	82 503	80 509	80 682	95 994	93 829	89 691	85 924	87 888	
Montreal (Dorval) International	Major Scheduled	94 578	105 300	38 910	35 860	28 076	30 961	33 390	30 575	29 210	27 373	31 128	35 240	29 736	26 159	25 501
	Major Charter	..	4 115	593	70	214	469	1 219	671	198	1 079	584	4 021	948	205	381
Domestic		45 058	51 033	30 169	26 729	20 518	24 116	26 027	24 016	23 599	21 959	24 725	29 303	24 564	21 374	20 619
Transborder		10 698	14 012	8 694	9 082	7 553	6 880	7 352	7 184	5 792	6 446	6 973	9 762	6 070	4 950	5 261
Other International		38 822	44 370	640	119	219	484	1 230	46	18	48	14	196	51	40	2
Total	94 578	109 415	39 503	35 930	28 290	31 430	34 609	31 245	29 409	28 452	31 711	39 261	30 684	26 364	25 882	
Ottawa International	Major Scheduled	3 543	5 899	5 491	5 325	4 850	4 704	4 957	4 370	4 660	4 696	6 188	8 161	8 462	7 029	6 534
	Major Charter	..	-	24	2	-	416	1 109	1 054	1 143	4 271	35	57	17	170	141
Domestic		3 337	5 721	5 324	5 131	4 635	4 456	4 661	4 104	4 358	4 425	5 606	7 679	7 898	6 135	6 028
Transborder		206	178	167	194	215	248	296	1 310	1 399	4 412	425	483	298	337	385
Other International		-	-	24	2	-	416	1 109	9	47	129	192	56	283	727	264
Total	3 543	5 899	5 515	5 327	4 850	5 120	6 066	5 424	5 803	8 967	6 223	8 217	8 478	7 199	6 676	
St. John's	Major Scheduled	3 453	7 124	6 439	7 200	7 034	7 645	7 803	6 918	6 550	6 604	6 599	5 921	5 177	4 665	4 190
	Major Charter	..	6	-	-	-	3	23	3	-	-	26	26	-	10	-
Domestic		3 453	7 124	6 438	7 200	7 034	7 636	7 764	6 891	6 516	6 555	6 556	5 757	5 034	4 520	4 096
Transborder		-	-	6	1	-	-	-	-	-	-	-	26	-	10	-
Other International		-	-	6	-	-	-	12	62	29	34	49	69	165	143	145
Total	3 453	7 130	6 439	7 200	7 034	7 648	7 826	6 921	6 550	6 604	6 625	5 947	5 177	4 675	4 190	

Note: Some totals may not add due to rounding.

Sources: Statistics Canada; Catalogue Nos. 51-005, 51-203, 51-207.

Table 6.7

Cargo Traffic (Enplaned and Deplaned) at the Top 10 Canadian Airports, for Major Scheduled and Major International Charter Services, by Category and Sector, 1970, 1975, 1980-1992 – Concluded

Airport	Category and Sector	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992P
(metric tonnes)																
Vancouver International	Major Scheduled	32 964	56 310	67 562	67 487	68 850	74 972	81 155	83 107	87 548	89 475	100 869	122 306	119 844	123 401	130 071
	Major Charter	..	780	1 551	844	302	205	257	2 831	2 592	2 030	2 069	2 019	1 205	789	1 318
Domestic	Transborder	26 432	43 915	50 552	51 001	51 078	55 418	59 089	61 793	60 716	60 334	66 243	78 157	73 780	71 415	70 070
Other International	..	5 107	7 223	9 260	9 191	7 427	9 253	10 118	11 682	13 620	15 419	16 733	20 171	18 688	18 547	21 723
Total	32 964	57 090	69 113	68 331	67 152	75 177	81 412	85 938	90 140	91 506	102 938	124 325	121 049	124 191	131 389	
Winnipeg International	Major Scheduled	17 125	21 453	24 678	27 588	22 998	22 755	22 998	18 789	15 701	11 959	14 369	28 490	28 148	25 494	27 855
	Major Charter	..	193	916	4 047	54	22	–	206	234	352	517	1 186	329	50	496
Domestic	Transborder	16 059	18 069	21 913	25 670	21 141	20 489	20 954	17 054	14 443	11 168	13 032	26 608	26 152	23 664	25 699
Other International	..	986	3 198	2 671	1 760	1 595	1 872	1 524	1 453	1 327	1 030	1 767	2 638	2 317	1 838	2 380
Total	17 125	21 646	25 594	31 635	23 052	22 777	22 998	18 994	15 935	12 311	14 887	29 677	28 477	25 543	28 332	
Total Top 10 Airports	Major Scheduled	258 036	372 087	448 622	446 146	426 790	468 302	526 826	527 317	498 970	510 304	585 830	676 783	688 596	659 347	652 485
	Major Charter	..	8 902	9 565	13 340	13 681	7 562	11 538	21 761	23 575	33 169	26 876	32 614	19 452	15 920	13 225
Domestic	Transborder	168 852	238 635	294 600	285 967	287 023	312 888	339 549	339 997	301 206	293 924	319 972	394 518	379 232	346 119	330 740
Other International	..	40 497	63 509	74 813	72 108	62 445	63 086	66 975	72 398	70 379	86 461	100 473	112 226	109 667	113 046	111 040
Total	258 036	380 989	458 187	459 486	440 481	475 864	538 364	549 076	522 545	543 475	612 706	709 397	708 047	675 267	665 711	

Note: Some totals may not add due to rounding.
 Sources: Statistics Canada: Catalogue Nos. 51-005, 51-203, 51-207.

The increase in cargo shipments was partially explained by high interest rates which forced companies to reduce inventories and created the need for efficient distribution systems. They were also due to the marketing efforts of carriers who realized the potential in cargo service and finally, were partially due to improved airport facilities for cargo handling, such as at Mirabel and Vancouver.

The largest volume gains, ranked in order of magnitude between 1975 and 1991, occurred at Mirabel, Calgary and Vancouver. Still, in spite of the congestion, Lester B. Pearson, handled by far the largest volume of cargo traffic of all airports (see Table 6.7).

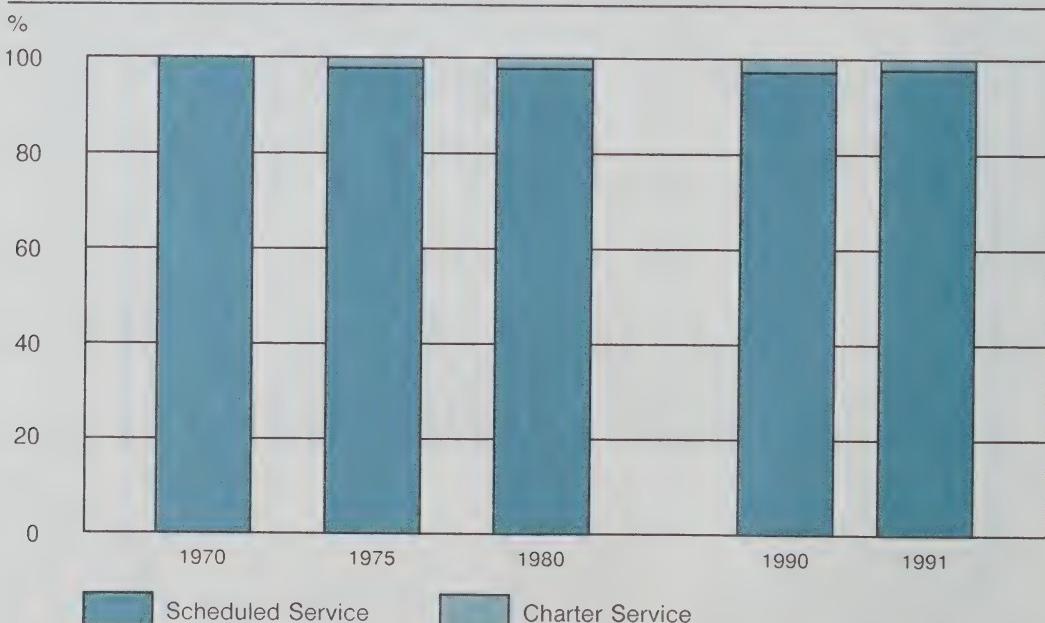
Air cargo traffic, for the most part, was carried on scheduled services as opposed to charter services (see Figure 6.6). The exception to this was Hamilton in 1990 and 1991, where the volume of cargo traffic handled by charter services exceeded that handled by scheduled services and was second only to Lester B. Pearson. This interesting development occurred as a result of an experimental airport program at Hamilton (and Mirabel) which provided incentives to cargo including split charters by non-scheduled carriers, as a result of the overflow from the congestion at the Toronto airport and due to the close proximity of Hamilton to Toronto and the United States. (6) The convenience of the Hamilton airport over Lester B. Pearson was improved by its lack of a curfew since much of the cargo traffic was overnight delivery. Although the market share of scheduled cargo carried declined at the top 10 airports, it remained over 95% of the market.

The domestic sector also lost its market share of total cargo carried through the years. Domestic cargo³⁶ carried fell from approximately 65% in 1970 to just over half of all cargo carried in 1991 (see Figure 6.7). The leading airport with respect to domestic cargo traffic has always been Lester B. Pearson, handling over 100 thousand metric tonnes in each year since 1980 or about 30 to 40% of the domestic volume from the top 10 airports.

³⁶ It should be noted that domestic entity cargo charter data are not included.

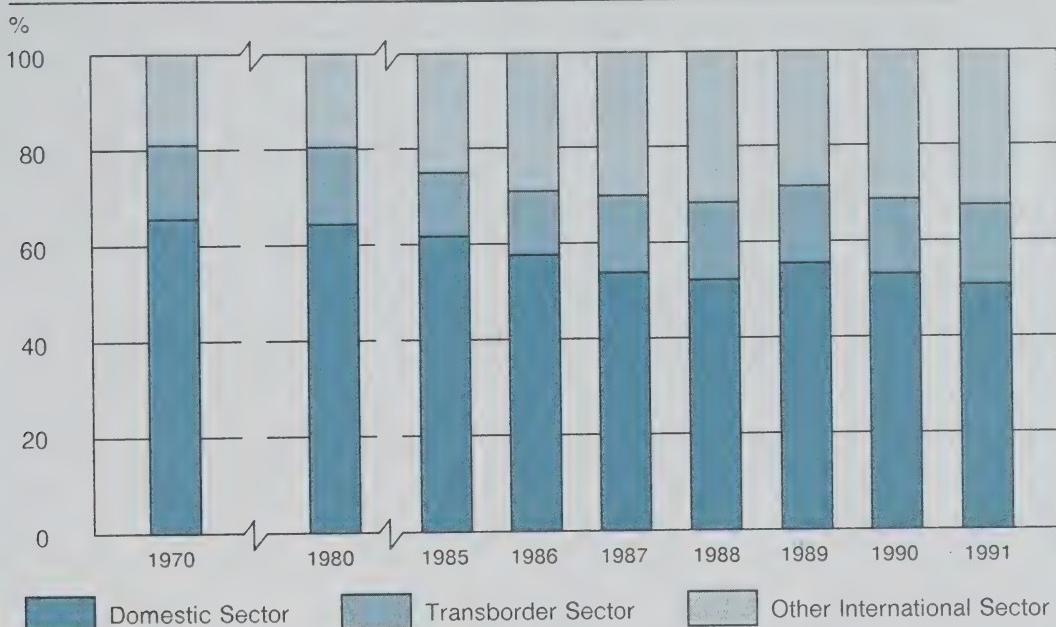
Figure 6.6

Cargo Traffic at the Top 10 Canadian Airports, Market Share, by Category of Service, 1970, 1975, 1980, 1990-1991



Sources: Statistics Canada: Catalogue Nos. 51-005, 51-203 and 51-207.

Figure 6.7
Cargo Traffic at the Top 10 Canadian Airports, Market Share, by Sector
1970, 1980, 1985-1991



Sources: Statistics Canada: Catalogue Nos. 51-005, 51-203 and 51-207.

The transborder sector accounted for about 17% of total demand in 1991 remaining approximately equal to the 1970 level. The volume of cargo in the other international sector excluding the United States, increased from 48 thousand (19%) to just over 216 thousand metric tonnes for 32% of the total from 1970 to 1991. The volume of cargo carried in the transborder sector during this period, increased from approximately 40 thousand to 113 thousand metric tonnes.

Internationally, to points other than the United States, Mirabel ranked first with approximately 45% of the volume until 1984. Mirabel's success in cargo shipments was stimulated by a number of incentives in the 1980s, including reduced landing fees for freighters, the removal of the fuel tax and the overall implications of the Open Skies concept. This change at the time granted special authorization to foreign airlines that were carrying international cargo shipments to and from Mirabel airport and were coming from or destined for points outside of Canada.

Since then, Lester B. Pearson outranked all other airports, carrying just under half of total volume. Over 50% of the cargo traffic to and from the United States was handled at Lester B. Pearson from 1970 to 1991 (see Table 6.7).

Activity in the cargo area was especially healthy in the remote areas of the Canadian north which were very dependent on air transportation for supplies. The airports of relatively small cities, such as Norman Wells and Yellowknife in the Northwest Territories, saw their cargo flows surge in the last two decades. For example, they handled approximately 300 and 800 metric tonnes of cargo, respectively in 1970. Comparable figures in 1984 were 1 900 and 1 660 metric tonnes representing overall increases of about 224%. Cargo loaded and unloaded in the Northwest Territories reached a high of 10 401 metric tonnes in 1989, falling to 8 091 metric tonnes in 1991.

The long term outlook for cargo is good for a number of reasons. International traffic is expected to continue to show strong growth, particularly to and from the Pacific Rim countries and the government is committed to including cargo clauses in the negotiation of bilateral agreements. Interest rates which tended to be high in the 1980s, the availability of just-on-time-delivery and the need to reduce expenses, encouraged businesses to keep their inventories low. This, in turn, caused companies to build a reliance on air cargo to transport merchandise quickly. The economy is beginning a growth cycle, bringing with it a surge of new small businesses with cargo shipment needs. Airports are expanding and improving their cargo handling facilities and lastly, additional regulatory reform will further reduce the restraints on the growth and development of the cargo market.

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- (5) "125 Years of Canadian Aeronautics, A Chronology 1840-1965", by G.A. Fuller, J.A. Griffin and K.M. Molson, pages 69, 85, 109.
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CHAPTER 7

From Horse and Carriage to Undercarriage - The Fleet



From Horse and Carriage to Undercarriage – The Fleet

The 1920s saw the first serious attempt at commercial aviation in Canada and around the world. A wide array of aircraft was used, ranging from war surplus, single-engine biplanes and flying boats, to trimotor monoplanes. Laurentide Air Services was established in 1919 using surplus Curtiss HS-2L flying boats (see Figure 2.1). Throughout the 1920s, the flying boat and the float plane dominated the Canadian commercial fleet since they were suited for remote bush flying. With each new decade came a major step in flight technology.

Summer, 1915 – The first series production of aircraft in Canada occurred when the Curtiss JN-3 was placed in production at Curtiss Aeroplanes & Motors Ltd., Toronto. A total of 18 was produced. (1)

were ideal for use in the North. One of the first of these bush planes in the 1930s was the Canadian-built Noorduyn Norseman. In 1991, twelve Norseman were still in use in the Canadian North.



Curtiss HS-2L Flying Boat,
National Aviation Museum

By the end of the 1920s, Canada's commercial fleet consisted mainly of single-engine, high-wing monoplanes such as the Fairchild FC-2 and the Fokker Universal. These aircraft could use floats in the summer and skis in the winter and

Flying boats, such as the Martin M-130 and the Short Brothers S-23, were used for most long-haul, over-water commercial flights in the 1930s. In the mid-1930s, airlines began to replace their old machines with the Douglas DC-2 and DC-3. The DC-3 carried 21 passengers and made scheduled service profitable for the first time without any mail subsidy. In 1937, however, Trans-Canada Air Lines used the Lockheed Super Electra on their scheduled service since the DC-3 was seen as too large for the Canadian market. The first DC-3

entered Canadian service in 1941 and 32 remained in commercial use in 1991.

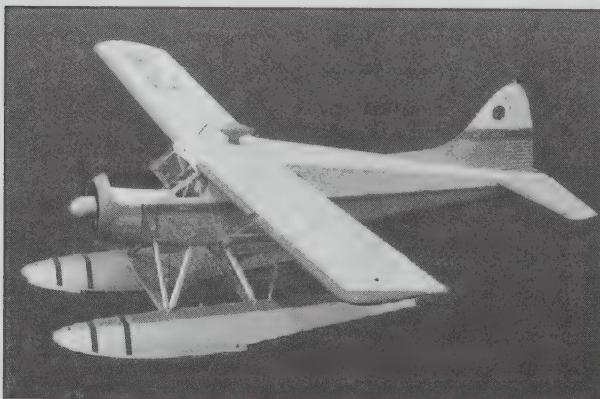
World War II had a huge positive effect on the design and production of long range, land based aircraft. For the first time airlines could make routine overseas flights without using flying boats. Even before the end of the war, overseas flights were becoming more common. Trans-Canada Air Lines, a pioneer in these efforts, used converted Lancaster bombers built in Malton, Ontario, to fly the North Atlantic.



Douglas DC-3,
Courtesy McDonnell Douglas

After the war, long-range aircraft such as the Douglas DC-4, Lockheed Constellation and the Boeing Stratocruiser replaced the flying boats on long-haul flights. Trans-Canada Air Lines purchased eight Constellations beginning in 1954, while Canadian Pacific Air Lines (CP Air) introduced the DC-6B in 1953. Most flying, however, was still short-haul and the 10,000 DC-3s built during the war as military transport aircraft dominated the fleet of the world.

Jets arrived in the 1950s. This decade saw many aircraft such as Bristol Britannia, de Havilland Comet, and Vickers Viscount. In Canada, Canadair built the North Star used by both Trans-Canada Air Lines and Canadian Pacific Air Lines, while Avro Canada unveiled the short-lived Jetliner.



DHC-2 Beaver was designed specifically for the Canadian bush environment, National Aviation Museum

Canada's first postwar commercial success came from the de Havilland Beaver and later, the de Havilland Otter. These were in production for nearly 20 years beginning in 1947 (Beaver) and 1951 (Otter), with 1,692 Beavers and 466 Otters built and exported worldwide. The Beaver's rugged design was so well adapted to the Canadian bush environment that they were as popular in 1991 as they were in 1970. There were 159 in 1970 and 260 in use in 1991. In 1991, it was the second most popular commercial aircraft in Canada, after the Cessna Skyhawk trainer.



Lockheed Super Constellation was used by TCA on its long distance routes

The Turbine Revolution

The improvement of gas turbines was a major step in aviation. Gas turbines gave greater speed, burned cheaper fuel oil instead of gasoline³⁷, and could operate at an altitude well above bad weather.

The first commercially successful use of the gas turbine was the Vickers Viscount turbo-prop which flew beginning in the 1950s. Trans-Canada Air Lines ordered 51 of these starting in 1954 to replace the North Stars and the DC-3s. When the Vickers Vanguard (turbo-prop) and the DC-8 (turbo-jet) arrived in 1960, Trans-Canada Air Lines retired its piston aircraft to become one of the world's first all turbine airlines.

Another commercially successful turbo-prop was the Bristol Britannia. Canadian Pacific Air Lines had eight in its long range trans-Pacific fleet in the late 1950s and early 1960s.

³⁷ Although jet fuel was cheaper than gasoline, early turbo-prop and especially turbo-jet engines required a lot of fuel.



DHC-6 Twin Otter can be fitted with wheels, skis or floats, National Aviation Museum

One of the first commercially successful jets, the Boeing 707, flew in July 1954.³⁸ Trans-Canada Air Lines and Canadian Pacific, however, both opted for the Douglas DC-8 in the early 1960s. The speed and comfort of these jets revolutionized long distance air travel.³⁹

A new generation of narrow-body, short-haul jets, the Boeing 727, the Douglas DC-9 and the Boeing 737 entered service in the 1960s. All three types were used by Canadian Pacific Air Lines and Trans-Canada Air Lines in the late 1960s. The Boeing 737 quickly became a very popular commercial jet in Canada.⁴⁰

The turbo-fan, wide-bodied jet revolutionized air travel in the 1970s. These included the Boeing 747, the McDonnell Douglas DC-10, the Lockheed L1011 and the Airbus A300. Their large passenger capacity and high fuel efficiency meant much lower costs per passenger-kilometre. These aircraft helped make air travel common and affordable.⁴¹



Boeing 747, Courtesy Canadian Airlines International Ltd.

September 3, 1915 – The first twin-engined aircraft to be designed and/or built and/or flown in Canada, the Curtiss Canada prototype, was tested at Long Beach, near Toronto, by Antony H. Jannus. (1)

The wide-body aircraft of the 1970s were responsible for the rise of the commuter air carriers in the 1980s. These new jumbo jets needed large numbers of passengers to fill them, but they were themselves unsuitable for short ranges and small markets.

This led to the creation of the hub and spoke system where some seats on the jumbo jets were filled by connecting passengers of affiliated air carriers which operated smaller aircraft.

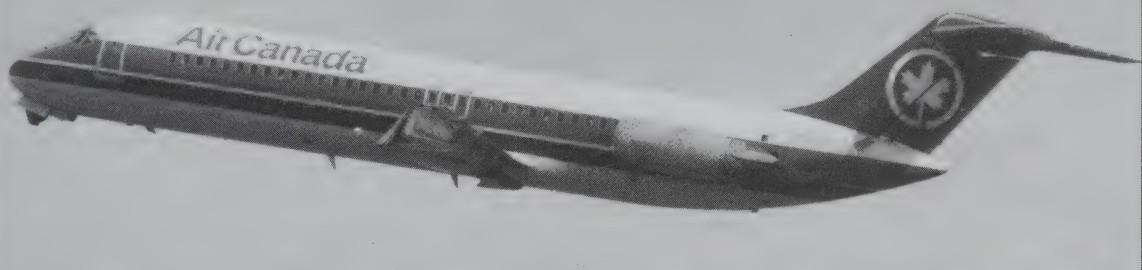
In the early 1980s, the commuter fleet consisted predominantly of older turbo-props such as the Convair 580 and the Hawker Siddeley 748 with 20 and 26 seats, respectively, in use in 1985. These were replaced with new generation turbo-props such as the de Havilland Dash 7 and Dash 8, the British Aerospace Jetstream, the ATR42, and the Embraer Brasilia. From 1970 to 1991, the number of commercial turbo-props grew by a factor of five, from 97 to 514. In 1991, there were over 90 Dash 8s in service with the family networks, accounting for 44% of the commuter fleet.

³⁸ The de Havilland Comet was the first jetliner.

³⁹ By 1975, the two airlines had 51 DC-8s in service. In 1991, the remaining 16 DC-8s flying in Canada were used mainly as freighters.

⁴⁰ There were over 73 Boeing 737s in use in Canada in 1985. In 1991, there were fewer in use, however Boeing 737s were still more common than any other jet.

⁴¹ Turbo-fan, wide-body jumbo jets were the main aircraft type in use in the world in 1991. In this year, Canada's commercial air carriers operated 33 Boeing 767s, 15 Boeing 747s, 18 L1011s, and 8 DC-10s.



McDonnell Douglas DC-9 is the mainstay of Air Canada's short-medium range routes, courtesy Air Canada

Fleet Renewal

Economic hard times in the 1980s expedited a move towards fleet renewal as fuel costs more than doubled as a percentage of operating expenses. As fuel and operating costs increased and the pressures of competition forced ticket prices lower, aircraft with lower operating costs were in demand. New technology aircraft were built with two engines instead of the traditional three or four. The new technology also had computerized controls that reduced the number of flight crew from three to two. The Airbus A320, ordered by both Canadian Airlines and Air Canada, fitted this category.



Boeing 727, Boeing Canada

Fleet renewal was also prompted by environmental deadlines for reduced noise and pollution levels. Stage I aircraft, such as the DC-8 and Boeing 707 jets, were banned from most major world airports by the end of 1991. Stage II aircraft, with high bypass, turbo-fan engines can be used until 1996 when Stage III rules will limit noise and smoke levels even further. Only the newest technology aircraft, such as the Boeing 757 and 767 and the Airbus A320, meet Stage III regulations.

The Fleet of The Major Carriers and Their Families

Before deregulation in the late 1970s, Canada's commercial fleet reflected government policy on market distribution. Air Canada, as Canada's flag carrier, had a large jet fleet and most of the domestic and international routes. Canadian Pacific Air Lines had a smaller fleet of jets and a smaller portion of total operations.

With increased deregulation, the airlines increased their use of medium-size aircraft offering a higher frequency and more competitive service to their customers. With deregulation, although there were some trade-offs in terms of jet service and direct flights, many small communities attained additional competitive service from the carriers in the families and their turbo-prop aircraft. As well, many points such as Hamilton, London and Windsor, lost jet services but were included in large charter programs to and from western Canada. (2) In 1992, there was clearly a more balanced distribution of market share between the major carriers.

The fleet of Canadian Airlines consisted mostly of Boeing 737s throughout the 1980s. Although their numbers were declining, there were still 52 in operation in 1992. These aircraft were used on middle range flights (see Table 7.1).

Air Canada, whose fleet had no Boeing 737s, consisted rather of Boeing 727s, and DC-9s. In 1992, Air Canada had 35 DC-9s in service and 25 Airbus A320s. With fleet renewal, the major carriers began to replace older three engine wide-body aircraft (L1011s and DC-10s) with aircraft such as the Boeing 767. The extended range aircraft had lower operating costs than the Lockheed L1011 and soon replaced them on Air Canada's long-haul domestic and international routes.

Canadian Airlines also made a move toward Boeing 767s by acquiring eight in 1988 and 1989. The 12 new Airbus A310s acquired with the purchase of Wardair, were sold by Canadian Airlines in order to standardize their fleet with the Boeing 767. It was advantageous in terms of maintenance to have standardized aircraft types in a fleet, to reduce the number of types of spare parts in inventory and the amount of training for maintenance and flight crew members. Air Canada also chose the Boeing 767 with 21 in service in 1992.

There was also a move by both major airlines towards the Airbus product. At the end of 1992, 36 Airbus A320s were in the fleets of Air Canada and Canadian Airlines (see Table 7.1).

The fleet of the family networks had a significant effect on their parent carrier since the major airlines depended on this feeder source for additional passengers (see Figure 2.2). As the families of the major carriers matured, more routes were transferred from the major carriers, and the affiliates, along with the rest of the industry, began to use some jet aircraft.

Among the major carrier's family, of 30 piston aircraft in scheduled service in 1987 only one remained in 1991. The number of jet aircraft in use by the families meanwhile, grew from four in 1987 to 22 in 1991 (see Table 7.1). The principal type was the British Aerospace BAe 146, designed especially for the commuter market. In 1991, 13 of these were flying in Canada.

The variety of aircraft types in use by the carriers in the families also saw a significant change. The large variety that resulted from merging regional carriers into the family as feeder carriers was rationalized and standardized as part of their cost reduction programs. From just under 20 different types in 1987, the variety was pared by eight types for the Air Canada connectors and by five types for Canadian Airlines partners.



Lockheed 1011-500, Courtesy Air Canada

The families also modernized while standardizing their fleets. In 1987, the most common aircraft type was the 1950s vintage Convair 580 with 19 in service in the two networks. This accounted for 19% of all aircraft types then in use. The de Havilland Dash 8 was by far the most commonly used aircraft, with 92 in service by 1991, accounting for 44% of the fleet of the family. The Dash 8-300 model weighed seven tonnes less than the 56 passenger Convair 580 and required four tonnes less fuel to carry the same number of passengers at the same speed and over the same distance.

The proportion of newer aircraft in the fleet was high in 1991 due to the fleet renewal programs. Over a quarter of the fleet of Canadian Airlines was under five years of age and well over a half were under ten years of age in 1991. This occurred partially from Pacific Western Airline's purchase of other airlines and their assets. Just under a fifth of Air Canada's aircraft were under five years of age and well over a third were under ten years of age. Newer fleet required less maintenance and were more likely to comply with the noise regulations. Three quarters of the aircraft in both families were under ten years of age reflecting their need to modernize as they assumed their feeder roles (see Table 7.2).

Table 7.1

Fleet of Air Canada, Canadian Airlines and Their Affiliate Networks, 1987-1992

Year	Designator	1987	1988	1989	1990	1991	1992
Air Canada							
Jet							
Boeing	B727	33	33	33	30	19	13
Boeing	B747	5	6	6	6	9	9
Boeing	B767	14	18	21	21	21	21
Douglas Aircraft	DC8F	5	6	6	5	5	5
McDonnell Douglas Super	DC86	3	2	-	-	-	-
McDonnell Douglas	DC9	-	1	-	-	-	-
Douglas Aircraft DC-9-32	DC93	35	36	36	35	35	35
Airbus Industrie	EA32	-	-	-	4	12	25
Lockheed California L-1011	L101	10	9	8	8	8	7
Lockheed California L-1011-500	L105	6	5	6	6	4	-
Total Jets		111	115	116	115	113	115
Air Canada Connectors							
Piston							
Cessna Aircraft	C402	13	3	-	-	-	-
Douglas Aircraft	DC3	5	3	2	-	-	-
Total Pistons		18	6	2	-	-	-
Turbo-Prop							
Hawker Siddeley HS 748	A748	6	8	-	-	-	-
British Aerospace Jetstream 31	BA14	-	5	14	15	15	6
Beech Aircraft 200	BE20	1	6	-	-	-	-
Beech Aircraft B99	BE29	9	9	-	-	-	-
Convair 580	CV58	9	7	2	-	-	-
de Havilland DHC-6	DH6	12	9	6	8	8	8
de Havilland DHC-7	DH7	6	5	4	4	-	-
de Havilland DHC-8	DH8	13	26	38	50	59	63
Lockheed 188A,C	L188	3	3	2	3	-	-
Swearingen	SW4	5	1	1	1	1	-
Total Turbo-Props		64	79	67	81	83	77
Jet							
Boeing 737	B737	-	-	2	2	2	3
British Aerospace BAE 146	BA46	-	5	8	10	10	10
Fokker F28,F28MK	FA28	-	1	-	-	-	-
Total Jets		-	6	10	12	12	13
Canadian Airlines							
Turbo-Prop							
Hawker Siddeley HS 748	A748	1	-	-	-	-	-
Fairchild FH227	FA22	5	1	1	-	-	-
Lockheed 188C	L188	1	2	-	-	-	-
Total Turbo-Props		7	3	1	-	-	-
Jet							
Airbus Industrie A310	EA31	-	-	-	8	3	2
Boeing	B737	66	67	62	58	54	52
Boeing	B747	-	-	-	-	2	3
Boeing	B767	-	4	8	10	12	12
Douglas Aircraft	DC10	12	13	11	11	8	8
Airbus A320-211	EA32	-	-	-	-	5	11
Total Jets		78	84	81	87	84	88
Canadian Partners							
Piston							
Douglas Aircraft	DC3	1	-	-	-	-	-
Piper Aircraft	PA31	11	8	8	1	1	1
Total Pistons		12	8	8	1	1	1
Turbo-Prop							
Hawker Siddeley HS 748	A748	4	4	4	4	4	4
ATR	AT42	-	2	11	5	14	14
British Aerospace Jetstream 31	BA14	6	12	14	14	14	14
Beech Aircraft 200	BE20	1	2	1	6	6	1
Beech Aircraft B99	BE99	-	2	2	2	1	-
Convair 580	CV58	10	11	1	1	1	1
Convair 640	CV64	4	1	-	-	-	-
de Havilland Air DHC-6	DH6	3	3	3	3	2	2
de Havilland Air DHC-7	DH7	4	5	4	3	-	-
de Havilland Air DHC-8	DH8	9	11	22	27	33	31
Embraer	E120	-	-	-	3	5	6
Fairchild	FA27	2	2	-	-	-	-
Swearingen	SW4	5	5	8	-	-	-
Short Brothers	SHD6	2	2	2	2	3	3
Total Turbo-Props		50	62	72	70	83	76
Jet							
British Aerospace BAE 146	BA46	-	-	-	3	3	3
Boeing	B737	-	3	-	-	-	-
Fokker	FA28	4	5	3	-	7	6
Fokker 100	FK10	-	-	6	-	-	-
Total Jets		4	8	9	3	10	9

Note: Levels I-V.

The year 1987 is included for comparative purposes.

Figures are as of July 15 for each year.

Source: Statistics Canada/National Transportation Agency : Fleet Report.

Table 7.2

**The Age of the Fleet, Major Carriers and Their Affiliate Networks,
1991 and 1992**

Age		0-5	6-10	11-15	16-20	Over 20
Year						
Air Canada	1992	34	15	7	18	41
	1991	21	19	13	21	39
Air Canada Connectors						
Air Alliance	1992	13	1	—	—	—
	1991	14	—	—	—	—
Air BC	1992	24	4	—	—	8
	1991	22	4	—	—	8
Air Nova	1992	8	4	—	—	—
	1991	10	4	—	—	—
Air Ontario	1992	25	—	—	7	3
	1991	21	1	5	1	6
Air Toronto	1992	..	..	..	..	..
	1991	9	—	—	—	4
Northwest Territorial	1992	—	—	1	2	1
	1991	—	—	1	2	—
Sub-Total	1992	70	9	1	9	12
	1991	76	9	6	3	18
Canadian Airlines	1992	27	13	36	7	5
	1991	21	26	24	9	4
Canadian Partners						
Air Atlantic	1992	8	7	—	—	—
	1991	10	3	—	—	—
Calm Air	1992	—	—	1	2	5
	1991	—	—	2	1	5
Canadian Frontier	1992	..	..	..	..	..
	1991	5	—	—	—	—
Inter-Canadien	1992	13	—	—	—	—
	1991	2	—	—	—	—
Ontario Express	1992	22	3	—	—	1
	1991	21	—	—	—	—
Time Air	1992	20	3	—	4	4
	1991	21	3	1	4	9
Sub-Total	1992	63	13	1	6	10
	1991	59	6	3	5	14

Source: Statistics Canada: Internal Files.



McDonnell Douglas DC-10, Courtesy
Canadian Airlines International Ltd

The Data

There were three ways in which fleet data were compiled. First, the Canadian commercial fleet, as its name suggests, described the fleet used in commercial aviation as of the 15th day of the first month of each quarter throughout the year. These data were airline carrier specific and described the aircraft with valid certificates of airworthiness in possession at that time, whether or not they were in use. It could be directly related to the operating and financial data described in previous chapters.

Second, the civil aircraft activity data described those aircraft with a valid certificate of airworthiness and which flew during the past year. It included commercial aircraft, as well as, private and government aircraft and the number of hours flown within each category by type of aircraft.

April 20, 1920 – The first civil aircraft registered in Canada, a Curtiss JN-4(Can.) G-CAAA, was registered to the Aerial Service Co. of Regina. (1)

Finally, the civil aircraft register contained a description of any aircraft that was ever registered with Transport Canada, whether or not it currently has a valid certificate of airworthiness. Since

there was no penalty for not removing aircraft from the register, the aircraft listed may have been out of service for many years. These data were included for completeness since these numbers were often referred to in other publications.

The Canadian Commercial Fleet

The Canadian fleet saw great changes in the last two decades. In some cases, aircraft that were popular as recently as 1970 completely disappeared. Aircraft, such as the Vanguards and Viscounts were all retired from passenger service by 1985, giving way to Boeing 727s, 737s and 767s and DC-10s. The Airbus A320 showed increased popularity with 36 in total as well as the de Havilland Dash 8 with 101 in the fleet in 1992 (see Table 7.3).

Table 7.3

Principal Aircraft Types, by Weight Group, for Canadian Commercial Air Carriers, 1970, 1975, 1985, 1990-1992

Weight Group (kg)	Description	Designator	1970	1975	1985	1990	1991	1992
1) Fixed-Wing Aircraft								
A < 1950	Champion Aircraft	CH7	..	46	18	6	10	10
	Cessna Commuter	C150	287	472	404	127	134	128
	Cessna Skyhawk	C172	162	318	433	318	307	327
	Cessna Skywagon	C185	108	189	270	235	227	217
	Cessna 180	C180	255	199	105	72	73	77
	Piper Cherokee	PA28	153	251	137	84	85	90
	Other	..	428	701	582	553	583	
B ≥ 1950 < 3 403	de Havilland Beaver	DHC2	159	207	284	258	260	255
	Piper Aztec/Apache	PAZP/PA23	125	168	100	86	67	63
	Piper Navajo	PA31	13	25	148	181	176	172
	Other	..	192	350	330	311	312	
C ≥ 3 403 < 8 166	British Aerospace	BA14	-	-	-	29	29	20
	Beech Aircraft	BE90	-	3	18	12	12	14
	Beech Aircraft	BE99	-	1	15	20	20	21
	Cessna Aircraft	C550	-	-	3	4	3	4
	de Havilland Otter	DHC3	63	89	122	106	104	106
	de Havilland Twin Otter	DH6	20	68	84	71	74	73
	Other	..	215	252	269	260	266	
D ≥ 8 166 < 15 877	de Havilland Air	DH8	-	-	1	84	98	101
	McDonnell Douglas Dakota	DC3	62	104	56	45	32	32
	McDonnell Douglas Invader	A26	2	20	24	-	-	-
	Short Brothers 2 Harland	SHD6	-	-	-	2	3	3
	Other	..	36	60	61	53	58	
E ≥ 15 877 < 34 020	Vickers Viscount	VC7	32	-	-	-	-	-
	Canadair	CL60	-	-	1	4	3	5
	Convair 580	CV58	-	-	14	8	23	23
	General Dynamics	CV34	-	-	2	13	1	3
	Hawker Siddeley 748	A748	-	3	27	29	31	31
	McDonnell Douglas Skymaster	DC4	13	3	15	13	6	8
	de Havilland Air	DH7	-	-	7	13	4	5
	Fokker	FA28	-	2	-	10	11	7
	Other	..	37	21	35	35	38	
	Boeing 737	B737	19	31	53	61	58	56
F ≥ 34 020 < 68 040	Vickers Vanguard	VC8	12	-	-	-	-	-
	British Aerospace	BA46	-	-	-	13	13	13
	McDonnell Douglas DC9 Series30	DC93	36	45	35	35	35	35
	Other	..	28	23	20	15	16	
	Airbus Industrie A310	EA31	-	-	-	8	7	2
G ≥ 68 040 < 158 758	AirbusA320	EA32	-	-	-	4	16	36
	Boeing	B727	4	20	36	40	32	25
	Boeing	B757	-	-	-	4	6	11
	Boeing	B767	-	-	12	31	33	33
	McDonnell Douglas DC8 Freighter	DC8F	-	-	6	8	8	7
	McDonnell Douglas DC8 Series 40	DC84	16	16	-	-	-	-

Note: Figures are as of January 15 for 1970 and July 15 for other years.
Levels I-V.

Source: Statistics Canada/National Transportation Agency: Fleet Report.

Table 7.3

Principal Aircraft Types, by Weight Group, for Canadian Commercial Air Carriers, 1970, 1975, 1985, 1990-1992 – Concluded

Weight Group (kg)	Description	Designator	1970	1975	1985	1990	1991	1992
	McDonnell Douglas DC8 Series 50	DC85	11	10	-	-	-	-
	McDonnell Douglas Super DC8	DC86	22	25	16	14	8	4
	Other		..	13	4	31	1	1
H ≥ 158 758	Boeing 747	B747	-	12	13	9	13	16
	Lockheed Tristar/Tristar 500	L101/L105	-	12	16	21	20	11
	McDonnell Douglas DC10	DC10	-	-	11	11	8	8
	Other		-	-	-	-	-	-
2) Rotary-Wing Aircraft								
A ≤ 2 000	Bell Jet Ranger	HB4	45	249	334	379	365	348
	Bell Long Ranger	HB06	-	-	65	76	84	94
	Bell Trooper Ranger	HB47	230	158	41	22	14	18
	Hughes 369-500 Series	HU5	9	55	95	78	74	70
	Other		..	73	102	147	168	186
B ≥ 2 000 ≤ 3 403	Aerospatiale Alouette 3	HR60	1	3	7	5	9	10
	Other		..	12	12	5	11	56
C ≥ 3 403 ≤ 8 166	Bell Iroquois	HB04	13	24	69	71	70	25
	Other		..	16	24	70	73	70
D ≥ 8 166 ≤ 15 877	Sikorsky	HS61	2	5	11	13	11	11
	Other		..	-	-	-	1	3

Note: Figures are as of January 15 for 1970 and July 15 for other years.
Levels I-V.

Source: Statistics Canada/National Transportation Agency: Fleet Report.

Commercial piston aircraft peaked in 1981 at just over 3,900. Many of the old familiar piston aircraft were replaced by turbo-jet and turbo-prop aircraft as indicated by the decline in the use of piston aircraft by 1991 (see Table 7.4).

The number of turbo-prop and turbo-jet aircraft in the fleet jumped 332% between 1970 and 1991. In fact, the market share of these aircraft as it related to the whole commercial fixed-wing fleet, increased from about 8% in 1970 to well over 25% in 1992 (see Table 7.4).

Turbo-jet aircraft dominated turbo-prop aircraft in absolute numbers from 1970 to 1983. Since then, turbo-props more than doubled in number. Indeed, the turbo-props probably benefitted the most from the new Canadian air policies. Their use by the families gained in popularity as the short-haul routes of the major carriers were transferred to these carriers (see Table 7.4).



Bell 47B-3, National Aviation Museum

For rotary-wing aircraft (helicopters), the Bell Jet Ranger took first place in 1985 and continued to dominate, totalling 348 in 1992. It replaced the Bell Trooper Ranger that ruled the scene in 1970 but whose use has since declined steadily. The Bell Long Ranger also increased in use since 1985 with 94 in the fleet in 1992 (see Table 7.3).

The newest additions to the fleet in 1992 included the British Aerospace Jetstream and BAe 146, the de Havilland Dash 8, the Canadair CL60 and the Airbus A320. Jets have maintained and increased their prominence in the Canadian aviation market (see Table 7.3).

Table 7.4

Canadian Commercial Air Carrier Fleet, by Type of Power Plant, 1970-1992

Year	Fixed-Wing Aircraft				Helicopters			Total Aircraft in Fleet
	Turbo Jet	Turbo-Prop	Piston engine	Total	Turbine	Piston engine	Total	
1970	98	97	2,395	2,590	84	305	389	2,979
1971	130	115	2,354	2,599	101	315	416	3,015
1972	139	124	2,462	2,725	200	284	484	3,209
1973	151	126	2,593	2,870	285	274	559	3,429
1974	182	144	2,765	3,091	355	226	581	3,672
1975	209	134	2,945	3,288	405	190	595	3,883
1976	223	145	3,217	3,585	476	164	640	4,225
1977	213	192	3,421	3,826	516	171	687	4,513
1978	201	188	2,632	3,021	565	152	717	3,738
1979	221	211	3,652	4,084	679	139	818	4,902
1980	249	218	3,806	4,273	742	131	873	5,146
1981	266	238	3,907	4,411	786	114	900	5,311
1982	273	249	3,646	4,168	756	112	868	5,036
1983	273	255	3,448	3,976	769	108	877	4,853
1984	260	268	3,485	4,013	738	93	831	4,844
1985	249	291	3,357	3,897	681	80	761	4,658
1986	270	333	3,314	3,917	682	89	771	4,688
1987	283	378	3,340	4,002	691	79	770	4,772
1988	300	400	2,552	3,252	712	65	777	4,029
1989	343	456	2,521	3,322	698	64	762	4,084
1990	340	496	2,546	3,387	781	85	866	4,253
1991	329	514	2,435	3,278	793	87	880	4,212
1992	334	534	2,458	3,326	806	85	891	4,217

Note: Figures are as of July 15 for each year.

Source: Statistics Canada/National Transportation Agency: Fleet Report.

Civil Aircraft Activity by Individual Type

There were over nine thousand Canadian registered aircraft with a valid certificate of airworthiness that flew in 1970. This increased over 100% by 1980 to total close to 19 thousand aircraft. This growth was followed by small but almost yearly declines of 13% overall between 1980 and 1991. As previously noted, the hours logged increased around 84% from 1970 to 1980. However, as also noted, despite this growth in flying activity, the average hours flown by aircraft generally declined over the subsequent time period (see Table 7.5).

There are two primary reasons for this trend. The first concerned the increased cost of fuel in the 1970s while the second was the recessions of the early 1980s and 1990s. For example, the number of Cessna-Series 150 and 152 (aircraft used mostly for private purposes) increased 35% from 1980 to 1991 but average annual hours flown per aircraft declined 49%.

Even more surprising though, was that large commercial carriers experienced a similar trend in spite of their policy to optimize the use of revenue-generating aircraft and reduce large fleet sizes. The statistics indicated that the carriers had limited success in achieving this objective until the mid-1980s. Possibly the decline in use was partly explained by the increased use of simulators for training and better flight operations planning to reduce fleet positioning.

While Boeing 737s recorded over 100 thousand more hours in 1983 than in 1970, they showed a 5% decline in average annual hours flown per machine. However, from 1984 to 1990, the average hours flown per aircraft increased to a level that was higher than the average experienced in the pre-recession years (1980 and 1981). This occurred as the major carriers transferred their short-haul routes to their families and concentrated on long-haul routes.

The situation for Boeing 747s was similar. The average annual hours flown per aircraft decreased almost 14% between 1975 and 1983 but increased well above the 1975 level from 1984 to 1989, followed by a decline of 43% to 1991. The average annual hours flown for the Boeing 767, introduced into the fleet in 1983, more than doubled to the year 1989 but then declined in the next two years.



The very popular Boeing 737 commercial jet transport, courtesy Boeing Canada

Table 7.5

Number and Hours Flown, by Selected Canadian Registered Aircraft, 1970, 1975, 1980-1991

Description	Designator	1970		1975		1980		1981		1982		1983		1984	
		No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)
1) Fixed-Wing Aircraft															
Beech King Air	BE90	19	9	32	17	50	30	55	31	52	27	43	24	47	24
Beech Travelair	BE95	51	15	69	20	93	23	88	24	82	19	77	20	79	16
Boeing 727	B727	3	9	23	56	36	125	44	128	41	131	42	121	38	117
Boeing 737	B737	19	49	34	93	53	138	62	158	66	158	61	150	57	159
Boeing 747	B747	-	-	12	38	16	59	15	47	16	46	15	41	13	40
Boeing 767	B767	-	-	-	-	-	-	-	-	2	-	9	15	14	39
Cessna Commuter	C150	559	207	1,217	371	1,566	347	1,468	315	1,508	267	1,457	269	1,409	222
Cessna Skyhawk	C172	691	120	1,562	292	2,359	405	2,252	360	2,357	343	2,315	309	2,252	288
Cessna Skylane Super	C182	142	17	356	50	553	62	539	60	562	58	525	55	509	46
Cessna Skywagon	C185	226	59	491	119	843	201	832	171	829	153	795	144	798	132
Cessna Super Skywagon	C206	72	18	150	28	296	71	310	73	321	68	314	69	323	64
Cessna Twin Cessna	C310	59	13	95	16	159	35	151	42	146	38	136	34	134	28
Cessna 180	C180	654	149	747	126	798	91	759	121	749	110	712	100	697	67
Champion Citabria Traveller	CH7	526	48	699	54	702	38	663	44	674	35	644	32	627	32
Convair 580	CV58	-	-	-	-	12	2	13	18	12	14	11	12	20	23
de Havilland Beaver	DHC2	264	128	297	134	368	175	364	151	347	119	346	118	335	104
de Havilland Otter	DHC3	84	51	113	64	129	54	129	57	128	47	120	45	123	47
de Havilland Twin Otter	DH6	42	30	115	114	134	131	122	120	120	114	111	100	109	100
Hawker Siddeley 748	A748	5	5	5	5	18	19	18	18	25	26	18	18	25	27
Lockheed Tristar/	L1011	-	-	12	29	7	34	13	30	14	37	17	58	16	55
Tristar 500	L105	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Some totals may not add due to rounding.

Source: Statistics Canada/Transport Canada: TP2468.

Table 7.5

Number and Hours Flown, by Selected Canadian Registered Aircraft, 1970, 1975, 1980-1991 – Continued

Description	Designator	1970		1975		1980		1981		1982		1983		1984	
		No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)
McDonnell Douglas Dakota	DC3	90	48	124	77	88	68	76	51	75	39	70	36	62	36
McDonnell Douglas DC10	DC10	–	–	–	–	6	18	9	23	11	32	11	43	11	43
McDonnell Douglas DC9 Series 30	DC93	35	101	45	134	37	121	41	112	40	101	35	99	35	99
McDonnell Douglas Super DC8	DC86	51	169	25	85	24	66	24	56	23	42	22	27	13	18
Piper Aztec	PAZP	229	58	120	40	171	51	159	41	157	33	147	33	165	38
Piper Cherokee	PA28	384	118	795	215	1,098	201	1,021	174	1,058	135	1,070	130	1,048	112
Piper Navajo	PA31	26	9	61	24	168	87	148	77	152	72	162	80	158	77
Piper Seneca	PASE	–	–	–	–	89	22	84	22	89	21	88	19	97	23
Piper Super Cub	PA18	322	42	360	35	415	34	384	37	398	39	394	32	372	24
Others		4,354	645	6,368	896	7,457	968	7,313	944	7,418	862	7,112	783	7,113	834
Sub-Total		8,907	2,116	13,927	3,133	17,745	3,674	17,156	3,504	17,472	3,187	16,879	3,015	16,699	2,930
2) Rotary-Wing Aircraft															
Aerospatiale Astar	HR35	–	–	–	–	36	14	54	29	60	30	53	20	50	21
Bell Iroquois	HB04	17	11	39	21	61	40	68	44	72	46	79	42	72	32
Bell Jet Ranger	HB4	54	29	319	206	530	298	504	305	461	232	444	207	422	190
Bell Long Ranger	HB06	–	–	1	–	80	51	86	52	85	45	82	40	79	40
Hughes 369-500 Series	HU5	42	12	71	34	159	80	160	89	137	58	115	49	101	43
Others		368	150	326	118	280	107	260	100	257	91	210	75	213	67
Sub-Total		481	202	756	380	1,146	591	1,132	619	1,072	501	983	432	937	392
Total		9,388	2,317	14,683	3,512	18,891	4,265	18,288	4,123	18,544	3,689	17,862	3,447	17,636	3,322

Note: Some totals may not add due to rounding.
Source: Statistics Canada/Transport Canada: TP2468.

Table 7.5

Number and Hours Flown, by Selected Canadian Registered Aircraft, 1970, 1975, 1980-1991 - Continued

Description	Designator	1985		1986		1987		1988		1989		1990		1991	
		No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)
1) Fixed-Wing Aircraft															
Airbus Industrie	A300	-	-	2	3	11	2	9	2	3	-	-	-	-	-
Airbus Industrie	A310	-	-	-	-	4	1	12	41	12	49	5	20	5	10
Airbus Industrie	A320	-	-	-	-	-	-	-	-	-	-	1	1	28	58
Beech King Air	BE90	41	22	45	23	40	20	34	18	35	20	23	13	26	12
Beech Travelair	BE95	75	16	77	14	65	11	67	12	68	11	51	7	52	7
Boeing 727	B727	36	105	36	117	38	102	38	107	39	117	27	67	27	57
Boeing 737	B737	60	193	65	245	71	229	72	254	75	213	57	149	52	130
Boeing 747	B747	14	51	8	32	10	30	9	34	9	37	8	23	15	35
Boeing 767	B767	14	42	14	58	14	52	25	95	29	117	30	117	33	130
Cessna Commuter	C150	1,386	207	1,414	181	1,244	211	1,230	202	1,200	206	988	117	1,011	114
Cessna Skyhawk	C172	2,258	277	2,287	241	2,078	275	2,154	298	2,046	279	2,019	302	2,064	287
Cessna Skylane Super	C182	502	42	521	33	471	41	484	38	472	36	463	34	468	35
Cessna Skywagon	C185	781	129	785	107	723	111	720	105	698	98	676	90	673	83
Cessna Super Skywagon	C206	318	59	321	52	302	52	308	53	293	50	280	50	278	45
Cessna Twin Cessna	C310	120	23	133	21	109	21	106	19	103	18	103	18	87	15
Cessna 180	C180	684	59	686	45	629	51	631	48	615	50	589	42	608	46
Champion Citabria															
Traveller	CH7	642	27	625	21	571	24	628	24	591	23	547	20	558	21
Convair 580	CV58	22	26	28	33	18	23	-	-	-	-	-	-	-	-
de Havilland Beaver	DHC2	335	101	334	91	327	112	328	106	323	106	313	101	316	89
de Havilland Otter	DHC3	117	47	114	45	100	48	113	50	108	47	99	39	104	36
de Havilland Twin Otter	DH6	108	94	110	97	99	91	111	94	116	101	99	86	102	84
Hawker Siddeley 748	A748	30	35	26	32	25	33	25	33	29	36	31	33	27	28
Lockheed Tristar/	L101/L105	19	56	16	54	19	46	16	50	19	58	18	45	13	30
McDonnell Douglas Dakota	DC3	57	30	56	28	48	25	47	21	54	22	35	11	32	11

Note: Some totals may not add due to rounding.

Source: Statistics Canada/Transport Canada. TPS468.

Table 7.5

Number and Hours Flown, by Selected Canadian Registered Aircraft, 1970, 1975, 1980-1991 – Concluded

Description	Designator	1985			1986			1987			1988			1989			1990		
		No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)
McDonnell Douglas DC9 Series30	DC93	35	101	35	101	34	90	36	92	36	97	35	80	35	74				
McDonnell Douglas Super DC8	DC86	13	20	13	20	9	20	11	27	15	32	5	10	3	4				
Piper Aztec	PAZP	166	39	166	30	133	27	150	29	143	26	133	24	125	23				
Piper Cherokee	PA28	1,048	97	1,080	83	981	89	1,015	95	1,002	98	959	95	964	91				
Piper Navajo	PA31	176	85	196	96	198	101	239	112	213	96	211	95	212	93				
Piper Seneca	PASE	102	20	111	17	109	19	109	20	119	23	113	21	106	19				
Piper Super Cub	PA18	370	21	362	18	331	25	340	21	334	20	296	16	305	15				
Others		7,087	894	7,399	859	6,465	920	7,608	1,096	7,253	1,193	6,955	1,220	7,126	1,244				
Sub-Total		16,584	2,895	17,040	2,794	15,259	2,926	16,644	3,180	16,022	3,250	15,171	2,961	15,430	2,891				
2) Rotary-Wing Aircraft																			
Aerospatiale Astar	HR35	48	25	57	31	61	34	70	38	85	51	86	49	96	48				
Bell Iroquois	HB04	38	14	42	13	44	17	56	22	54	22	31	12	27	9				
Bell Jet Ranger	HB4	425	200	443	192	423	213	431	214	451	232	412	206	406	167				
Bell Long Ranger	HB06	77	39	79	40	74	34	88	43	94	51	103	52	103	49				
Hughes 369-500 Series	HU5	95	43	90	39	83	42	84	41	85	40	76	36	79	29				
Others		216	70	228	64	210	81	246	84	254	91	242	95	314	108				
Sub-Total		899	391	939	379	895	421	975	442	1,023	487	950	450	1,025	410				
Total		17,483	3,256	17,979	3,173	16,154	3,347	17,619	3,622	17,045	3,737	16,121	3,411	16,455	3,301				

Note: Some totals may not add due to rounding.

Source: Statistics Canada/Transport Canada: TP2463.

June 1, 1922 – The first twin-engined aircraft to be civilly registered in Canada was the Dayton-Wright F.P.2, N-CAED. (1)

versus 571 hours in 1989), the de Havilland Twin Otter (714 versus 871), the Lockheed Tristar (2,417 in 1975 versus 3,053 in 1989) and the McDonnell Douglas DC-10 (3,000 in 1980 versus 4,000 in 1989). Of these aircraft models, only the DC-10 showed increased hours between 1989 and 1991.

In the category of rotary-wing aircraft (helicopters), the use of the Aerospatiale Astar and the Hughes 369-500 generally increased up to 1989 while the use of the Bell Iroquois, Jet Ranger and Long Ranger generally declined. The average number of hours flown annually for all helicopters increased slightly from 435 hours in 1970 to 467 hours in 1989, then declined to 418 hours in 1991.

Private Flying

Private flying was defined as the use of an aircraft for non-commercial purposes. While it was largely recreational, it also included flying activity on the part of corporations that used aircraft for business only. In other words, the owners used the aircraft in their own operations without charge for the passengers or freight they carried.

In all general aviation, private flying was generally the fastest growing category with growth especially remarkable between 1960 and the early 1980s. Hours flown by private aircraft increased from 259 thousand to 710 thousand from 1960 to 1970 and then increased to a height of over a million in 1981. With the increased cost of flying beginning in the early 1980s, private aviation declined from then on to total 679 thousand hours in 1991. This was less than the number of hours flown in 1968 (see Table 7.6 and Figure 7.1).

However, while there was growth in overall activity this was not the case for flying activity for individual aircraft. There was a marked slowdown in the average hours flown per aircraft after the late 1970s, a reflection of rising fuel costs, insurance costs, aircraft prices, and then in the early 1980s and 1990s, the world-wide declines in economic activity. Private aircraft were also restricted at some major airports. Private flying activity recorded a decrease of 49% from its height in 1981 to 1991 in terms of annual hours flown. In 1981, aircraft averaged over 100 hours flown while in 1991, they averaged approximately 58 hours (see Figures 7.1 and 7.2).

The most popular private aircraft in terms of hours flown were the Cessna Skyhawk 172, the Cessna Series 150 and 152, and the Cessna Skywagon in 1989. These aircraft seat four, two, and six passengers, respectively (see Table 7.6).

Among the fixed-wing aircraft, only a few models showed increases in the average number of hours flown annually between 1970 and 1989 (see Table 7.5). These were the Beech King Air (474 hours in 1970

Table 7.6

Number and Hours Flown, by Selected Canadian Registered Private Aircraft, 1980-1991

Description	Designator	1980		1981		1982		1983		1984		1985	
		No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)	No. of Aircraft	Hours ('000)
1) Fixed-Wing Aircraft													
Beech Musketeer	BE23	132	15	137	17	132	12	135	14	136	15	119	7
Cessna Centurion	C210	110	13	119	16	123	15	135	15	125	13	126	13
Cessna Commuter	C150	1,054	98	1,027	87	1,099	78	1,055	82	1,040	67	1,017	55
Cessna Skyhawk	C172	1,807	169	1,771	162	1,880	155	1,886	147	1,861	138	1,848	124
Cessna Skylane Super	C182	500	47	490	48	524	48	486	46	486	41	474	35
Cessna Skywagon	C185	510	68	518	70	528	63	523	62	526	59	530	55
Cessna Super Skywagon	C206	181	29	198	34	208	33	197	28	204	25	204	23
Cessna 170	C170	301	15	277	17	281	14	269	13	254	15	245	10
Cessna 180	C180	657	56	622	86	634	86	606	77	605	49	598	40
Champion Citabria													
Traveller	CH7	683	36	648	41	653	32	635	32	609	30	626	25
de Havilland Twin Otter	DH6	26	20	21	18	21	20	19	16	17	12	15	9
Gliders	GLDR	450	32	464	38	489	38	503	41	501	39	514	38
Homebuilt	HMBD	478	13	491	15	532	16	580	18	591	20	619	24
Mooney Mark 20	MO20	203	19	198	20	207	14	211	19	208	17	204	14
Piper Cherokee	PA28	884	85	853	89	916	76	933	74	917	57	930	58
Piper Super Cub	PA18	375	26	344	31	362	33	362	28	342	20	349	19
Other		5,025	504	4,068	480	4,875	425	4,634	385	4,577	373	4,502	354
Sub-Total		13,376	1,246	13,038	1,269	13,464	1,155	13,169	1,096	12,979	990	12,920	903
2) Rotary-Wing Aircraft													
Bell Jet Ranger	HB4	59	26	64	33	64	30	60	31	55	18	51	16
Other		121	29	114	29	114	26	91	23	95	20	73	15
Sub-Total		180	55	178	62	178	57	151	54	150	38	124	31
Total		13,556	1,300	13,216	1,332	13,642	1,212	13,320	1,150	13,129	1,027	13,044	934

Note: Some totals may not add due to rounding.

Source: Statistics Canada/Transport Canada: TP 2468.

Table 7.6

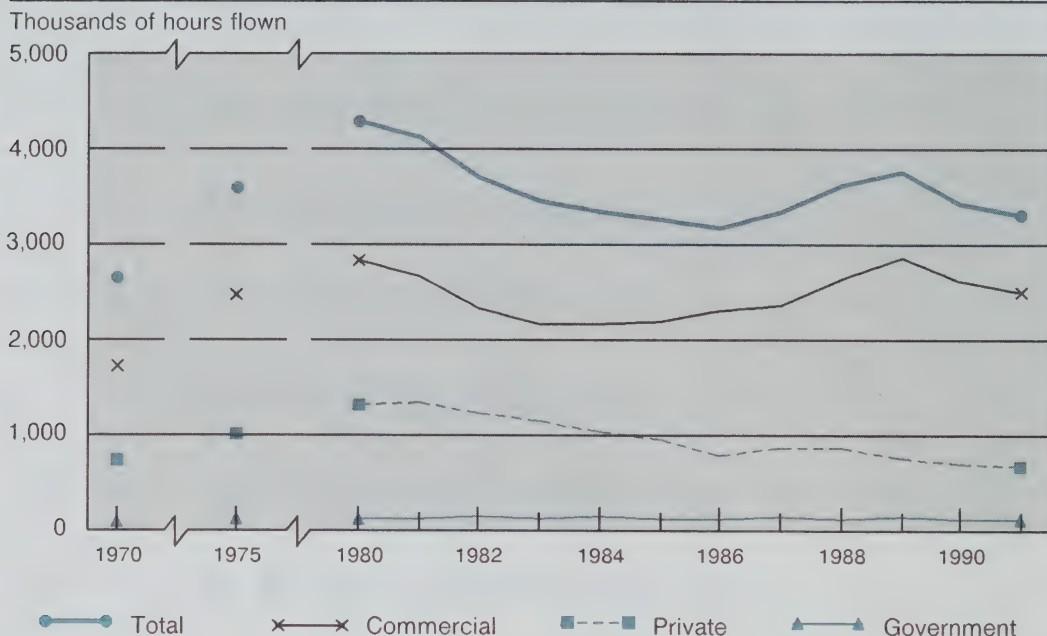
Number and Hours Flown, by Selected Canadian Registered Private Aircraft, 1980-1991 - Concluded

Description	Designator	1986		1987		1988		1989		1990		1991	
		No. of Air-craft	Hours ('000)	No. of Air-craft	Hours ('000)	No. of Air-craft	Hours ('000)	No. of Air-craft	Hours ('000)	No. of Air-craft	Hours ('000)	No. of Air-craft	Hours ('000)
1) Fixed-Wing Aircraft													
Beech Musketeer	BE23	116	5	103	6	99	5	101	4	101	4	97	4
Cessna Centurion	C210	133	11	127	16	152	13	118	8	115	9	117	10
Cessna Commuter	C150	1,045	41	920	56	924	58	890	50	814	41	832	46
Cessna Skyhawk	C172	1,866	93	1,697	114	1,710	105	1,622	95	1,587	91	1,622	88
Cessna Skylane Super	C182	485	27	430	32	451	32	437	29	434	29	436	28
Cessna Skywagon	C185	524	40	502	46	494	41	477	36	465	35	465	32
Cessna Super Skywagon	C206	191	17	189	19	185	16	173	13	162	13	160	13
Cessna 170	C170	258	8	220	11	236	9	225	8	220	8	232	9
Cessna 180	C180	594	31	557	35	559	31	543	31	517	27	525	29
Champion Citabria Traveller	CH7	611	19	554	22	610	23	575	22	531	19	544	19
de Havilland Twin Otter	DH6	12	7	11	7	12	5	14	6	7	3	7	2
Gliders	GLDR	539	31	493	37	572	40	567	40	531	33	537	35
Homebuilt	HMBD	638	18	544	20	767	35	801	31	671	22	726	24
Mooney Mark 20	MO20	211	12	182	15	194	13	186	11	185	12	191	12
Piper Cherokee	PA28	974	49	884	51	898	50	886	45	846	44	856	45
Piper Super Cub	PA18	340	16	304	22	308	16	305	17	267	13	273	12
Other		4,628	310	3,990	326	4,537	332	4,179	286	3,958	260	3,952	245
Sub-Total		13,165	735	11,707	835	12,708	824	12,099	732	11,411	663	11,572	653
2) Rotary-Wing Aircraft													
Bell Jet Ranger	HB4	54	17	43	14	45	14	47	15	33	9	36	10
Other		79	12	71	10	96	14	93	15	73	14	96	17
Sub-Total		133	29	114	24	141	28	140	30	106	23	132	27
Total		13,298	764	11,821	859	12,849	852	12,239	761	11,517	686	11,704	680

Note: Some totals may not add due to rounding.

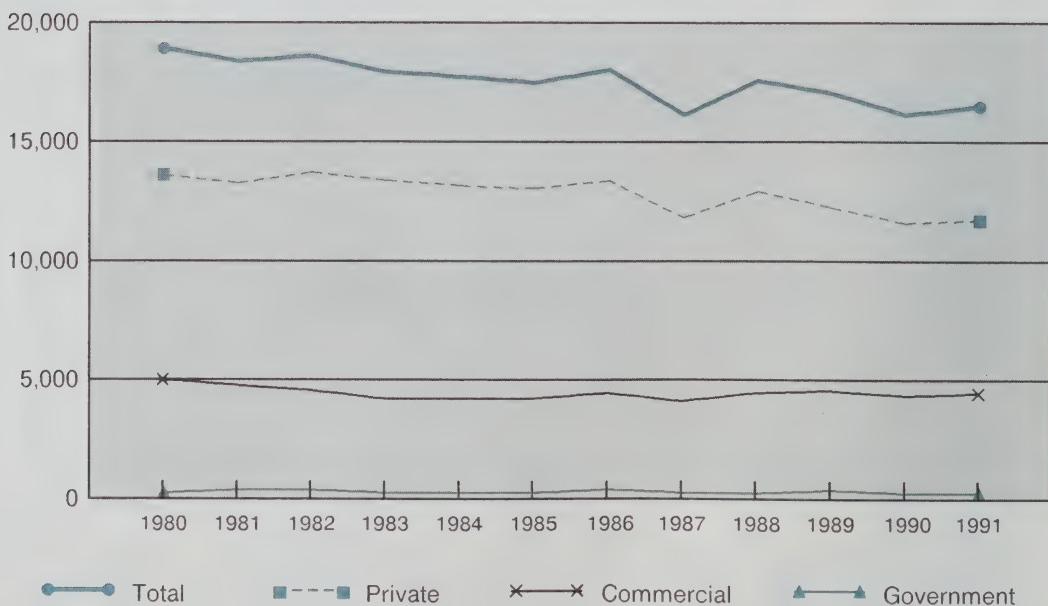
Source: Statistics Canada/Transport Canada: TP 2468.

Figure 7.1
Aircraft Hours Flown, by Type of Operation, 1970, 1975, 1980-1991



Source: Statistics Canada/Transport Canada: TP 2468.

Figure 7.2
Number of Aircraft Registered in Canada with a Valid Certificate of Airworthiness, 1980-1991



Source: Statistics Canada/Transport Canada: TP 2468.

Government-owned Civil Aircraft

Government aircraft are flown by either federal government agencies such as Transport Canada and the Royal Canadian Mounted Police (RCMP) or provincial government agencies.⁴² Some governments used these aircraft to help victims of accidents or catastrophes, arranging special flights to ferry them to where help can be obtained. Others may carry out specialty flying services such as forest fire patrol, game management surveys, fisheries inspection, enforcing Transport Canada regulations and the like. These aircraft were also used to transport elected officials and dignitaries and for other government business.

The number of aircraft in this category was small: about 200 aircraft in 1960 and nearly 300 in 1989. In addition, and contrary to other categories in general aviation, the activities of state-owned aircraft were quite stable over the years (see Table 7.7).

Canada's Aircraft Registry

In Canada, an aircraft is assigned an aircraft registration or 'skin marking' when it is registered with Transport Canada. This skin marking appears either on the underside of the wing or on the bottom surface of the fuselage or cabin. It identifies the airplane with its nationality and its registration.

This system of coding dates back 75 years to the Paris Air Convention of 1919. At that time, it was decided that countries should be assigned one letter to indicate their nationality followed by four more letters. The British Empire was assigned the letter G and as part of the empire, Canada was assigned a marking GC. The other three letters were any three letters in the alphabet.

⁴² Aircraft owned and operated by the Department of National Defence are not included.



Canadair CL215T Waterbomber is intended primarily for firefighting, courtesy Canadair

All Canadian aircraft sported this prefix until 1929. The system was altered somewhat through international negotiations and Canada adopted a prefix of CF followed by any three letters. Transport Canada began a new series in 1973 since the 17,576 possible combinations of three letter groupings were insufficient for the number of aircraft registered. That series began with CG. Again, in 1983, the first ultralight aircraft was registered using a new series beginning with the prefix I. Its appearance was just one more indication of growth in Canadian aviation.

Table 7.7

Aircraft Hours Flown, by Type of Operation, 1960-1991

Year	Total	Commercial	Private	Government
1960	1,323,044	878,558	258,650	63,200
1961	1,326,692	865,104	295,120	68,000
1962	1,350,709	854,195	336,899	70,400
1963	1,408,245	867,056	384,591	72,400
1964	1,544,803	947,585	441,518	71,600
1965	1,790,329	1,107,557	502,992	74,400
1966	2,202,918	1,374,575	584,886	73,600
1967	2,422,298	1,568,810	656,054	76,000
1968	2,591,047	1,647,152	698,201	73,320
1969	2,586,690	1,669,651	700,000	75,000
1970	2,633,376	1,713,878	710,000	76,000
1971	..	..	725,000	80,000
1972	2,646,999	1,768,440	791,218	87,341
1973	2,903,022	2,016,982	796,444	89,596
1974	3,102,924	2,122,962	889,334	90,628
1975	..	..	991,152	100,265
1976	3,581,897	2,499,962	976,671	105,264
1977	3,688,013	2,292,336	1,272,043	123,634
1978	3,931,941	2,496,914	1,309,860	125,167
1979	3,960,780	2,511,276	1,328,183	121,321
1980	4,265,188	2,844,179	1,300,427	120,582
1981	4,123,288	2,661,879	1,331,677	129,732
1982	3,688,713	2,343,394	1,212,206	133,113
1983	3,447,277	2,173,278	1,149,965	124,034
1984	3,322,200	2,176,118	1,027,218	118,864
1985	3,256,280	2,203,812	934,026	118,442
1986	3,172,506	2,302,952	764,235	105,319
1987	3,346,519	2,349,659	859,253	137,607
1988	3,622,837	2,652,314	852,238	118,285
1989	3,737,123	2,848,561	761,392	127,170
1990	3,410,802	2,620,259	686,324	104,219
1991	3,300,926	2,513,724	679,497	107,705

Note: From 1960 to 1970, Flying Clubs Hours are included in the Total.

1972-1979, Commercial hours are calculated from Total Hours minus Private and Government Hours.

Source: Statistics Canada/Transport Canada: TP 2468 and the Service Bulletin.

Aircraft based in Canada and flown by Canadians must be registered with Transport Canada through its Aeronautical Licensing and Inspection Branch. An aircraft requires a valid certificate of airworthiness before it can be flown for any purpose. All aircraft are listed in the Canadian Civil Aircraft Register, whether or not they have a valid certificate of airworthiness. As a result, the register is a good composite picture of Canada's civil fleet, both private and commercial.



The Noorduyn Norseman helped open the Canadian north in the 1930s, National Aviation Museum

The entries for all civil aircraft increased by more than 429% since 1960. There were over five thousand aircraft registered in 1960 and 28 thousand in 1991. Of those aircraft listed in 1991, airplanes comprised over 90% of the fleet, helicopters comprised around 5%, gliders made up 2%, balloons, just over 1% and gyroplanes constituted just under 1% (see Table 7.8).

Of all aircraft listed, 86% were single engine aircraft, 13% were twin engine and 1% had more than two engines in 1991. Almost 85% of the aircraft registered in 1991 had a gross weight less than or equal to 1 750 kilograms. Exactly 1% had a gross weight greater than or equal to 45 501 kilograms. The proportion of the lightest aircraft increased slightly through the years totalling 80% in 1960, 83% in 1970, 84% in 1980 and 84% in 1991. The proportion of the largest aircraft also remained relatively constant from 1960 to 1991 (see Table 7.9).

August 7, 1928 – The first tri-motored aircraft registered in Canada was a Ford 4-AT, G-CATX, of British Columbia Airways Ltd., Victoria. (1)

The commercial fleet numbered 1,863 and accounted for about 35% of all registrations in 1960. In 1991, they numbered 5,718 and accounted for 20% of all registrations. Growth over this period was over 200%. The number of aircraft registered for government use also grew from 204 in 1960 to 323 in 1989, an increase of just over 58%. The public fleet diminished slightly since then, to total 236 in 1991 (see Table 7.9).

Most registrations were private aircraft, accounting for more than three quarters of the total fleet in 1991. This compared to 61% in 1960. Canada's private fleet grew by about 576% from 1960 to 1991. The

Table 7.8

**Summary of the Canadian Civil Aircraft Register, by Type of Aircraft,
1960-1991**

Year	Total Aircraft	Airplanes	Helicopters	Gliders	Balloons	Gyroplanes
1960	5,318	4,998	219	101	-	-
1961	5,885	5,520	260	105	-	-
1962	6,249	5,834	287	128	-	-
1963	6,501	6,057	294	143	-	7
1964	6,933	6,454	316	151	-	12
1965	7,542	6,996	354	170	-	22
1966	8,310	7,699	390	189	-	32
1967	9,162	8,469	435	202	2	54
1968	9,973	9,223	453	216	4	77
1969	10,772	9,955	502	229	8	78
1970	11,315	10,424	552	245	10	84
1971	12,076	11,098	625	255	9	89
1972	13,157	12,067	712	275	7	96
1973	14,475	13,266	800	302	12	95
1974	16,149	14,853	849	339	17	91
1975	17,990	16,570	922	374	22	102
1976	19,737	18,202	989	415	27	104
1977	20,976	19,332	1,051	448	36	109
1978	21,577	19,875	1,085	461	49	107
1979	22,594	20,697	1,241	482	68	106
1980	23,624	21,553	1,381	511	91	108
1981	24,437	22,199	1,476	528	124	110
1982	24,682	22,412	1,462	548	148	112
1983	25,899	23,636	1,410	560	177	116
1984	26,514	24,301	1,326	572	197	118
1985	26,801	24,607	1,276	582	219	117
1986	26,969	24,811	1,264	589	224	116
1987	27,517	25,216	1,299	602	275	121
1988	27,955	25,574	1,338	613	304	122
1989	28,121	25,675	1,366	614	336	127
1990	28,155	25,632	1,416	609	358	128
1991	28,001	25,450	1,433	601	382	135

Source: Transport Canada: TP 220 as of December 31 of each year.

Table 7.9

**Summary of Canadian Civil Aircraft Register, by Category of Ownership, by Number of Engines and by Gross Weight,
1960-1991**

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Aircraft Purpose													
Private (Normal)	3,186	3,612	3,976	4,172	4,544	4,990	5,499	6,047	6,392	6,919	7,292	7,783	8,552
8	15	11	11	14	13	19	25	32	37	28	33	33	39
53	74	93	123	152	181	240	292	399	440	496	555	555	631
Private (Amateur Built)	3,247	3,701	4,080	4,306	4,710	5,184	5,758	6,364	6,823	7,396	7,816	8,371	9,222
Private (Ultralight)													
Total Private													
Commercial (Normal)	1,818	1,910	1,908	1,929	1,949	2,073	2,253	2,486	2,840	3,069	3,161	3,359	3,556
45	60	71	64	62	64	76	75	90	90	100	102	102	126
Commercial (Restricted)	1,863	1,970	1,979	1,993	2,011	2,137	2,329	2,561	2,930	3,159	3,261	3,461	3,682
Total Commercial													
State (Normal)	204	207	182	191	200	200	203	214	200	200	201	225	234
..
State (Restricted)	204	207	182	191	200	200	203	214	200	200	201	234	245
State (Experimental)													
Total State													
Experimental	4	7	8	11	12	21	20	23	20	17	37	10	8
Total Experimental	4	7	8	11	12	21	20	23	20	17	37	10	8
Number of Engines													
One	4,608	4,827	5,433	5,639	6,002	6,498	7,140	7,850	8,518	9,205	9,647	10,323	11,283
Two	484	479	564	588	647	738	839	960	1,082	1,179	1,255	1,330	1,442
More than two	125	130	124	131	133	136	142	146	153	151	156	159	146
Weight (Gross)													
0 - 1,750 kg	4,280	4,765	5,104	5,344	5,721	6,214	6,851	7,561	8,256	8,973	9,443	10,121	11,086
1,751 - 5,700 kg	685	733	776	789	847	958	1,069	1,171	1,254	1,318	1,350	1,420	1,502
5,701 - 13,500 kg	160	169	165	159	157	164	172	191	182	189	205	206	225
13,501 - 45,500 kg	161	159	152	151	139	136	147	167	182	182	178	182	191
45,501 - or more kg	32	59	52	58	69	70	71	72	99	110	139	147	153
Total Registrations	5,318	5,885	6,249	6,501	6,933	7,542	8,310	9,162	9,973	10,772	11,315	12,076	13,157

Source: Transport Canada: TP 220 as of December 31 of each year.

Table 7.9

**Summary of Canadian Civil Aircraft Register, by Category of Ownership, by Number of Engines and by Gross Weight,
1960-1991 – Continued**

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Aircraft Purpose													
Private (Normal)	9,446	10,661	11,907	13,134	14,032	14,446	15,060	15,728	16,371	16,771	16,951	16,998	16,941
Private (Restricted)	81	112	149	183	212	221	217	236	223	236	231	239	216
Private (Amateur Built)	691	749	819	873	954	994	1,057	1,09	1,164	1,234	1,291	1,370	1,426
Private (Ultralight)													
Total Private	10,218	11,522	12,875	14,190	15,198	15,661	16,334	17,073	17,758	18,241	19,755	20,578	20,959
Commercial (Normal)	3,838	4,175	4,606	5,007	5,211	5,323	5,653	5,923	6,027	5,777	5,453	5,231	5,116
Commercial (Restricted)	145	153	204	227	245	263	275	299	326	333	360	374	401
Total Commercial	3,983	4,328	4,810	5,234	5,456	5,586	5,928	6,222	6,353	6,110	5,813	5,605	5,517
State (Normal)	246	263	263	265	274	280	278	276	277	280	281	277	269
State (Restricted)	6	7	12	16	16	16	16	16	13	12	11	13	14
State (Experimental)	10	12	12	12	10	11	10	10	10	12	10	11	11
Total State	262	282	287	293	300	307	304	302	300	304	302	301	294
Experimental	12	17	18	20	22	23	28	27	26	27	29	30	31
Total Experimental	12	17	18	20	22	23	28	27	26	27	29	30	31
Number of Engines													
One	12,395	13,834	15,149	16,930	18,043	18,563	19,381	20,172	20,780	20,978	21,857	22,314	22,457
Two	1,612	1,788	1,986	2,195	2,296	2,346	2,500	2,682	2,826	2,818	3,115	3,251	3,358
More than two	151	168	186	167	150	153	160	165	176	187	187	177	182
Weight(Gross)													
0 - 1,750 kg	12,228	13,696	15,286	16,773	17,895	18,420	19,073	19,811	20,394	20,625	21,900	22,551	22,837
1,751 - 5,700 kg	1,631	1,789	1,980	2,222	2,370	2,454	2,790	3,045	3,243	3,247	3,207	3,177	3,140
5,701 - 13,500 kg	252	269	299	329	318	311	316	324	334	325	316	304	305
13,501 - 45,500 kg	195	199	210	207	203	198	204	223	232	246	242	252	265
45,501 - or more kg	169	196	215	206	190	194	211	221	234	239	234	230	254
Total Registrations	14,475	16,149	17,990	19,737	20,976	21,577	22,594	23,624	24,437	24,682	25,899	26,514	26,801

Source: Transport Canada: TP 220 as of December 31 of each year.

Table 7.9

**Summary of Canadian Civil Aircraft Register, by Category of Ownership, by Number of Engines and by Gross Weight,
1960-1991 - Concluded**

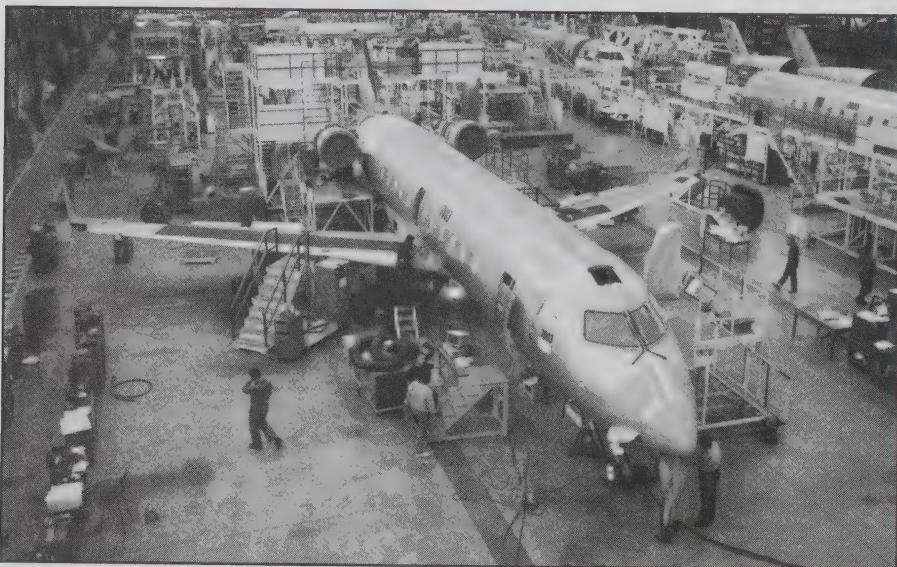
	1986	1987	1988	1989	1990	1991
Aircraft Purpose						
Private (Normal)	16,780	16,867	16,910	16,810	16,684	16,470
Private (Restricted)	220	233	234	226	232	224
Private (Amateur Built)	1,460	1,570	1,646	1,707	1,758	1,775
Private (Ultralight)	2,633	2,946	3,105	3,212	3,363	3,469
Total Private	21,093	21,616	21,895	21,955	22,037	21,938
Commercial (Normal)	5,116	5,107	5,282	5,352	5,314	5,245
Commercial (Restricted)	435	454	431	464	461	473
Total Commercial	5,551	5,561	5,713	5,816	5,775	5,718
State (Normal)	270	270	295	301	295	299
State (Restricted)	14	15	14	11	11	12
State (Experimental)	11	10	9	11	12	11
Total State	295	295	318	323	318	322
Experimental	30	35	36	36	35	34
Total Experimental	30	35	36	36	35	34
Number of Engines						
One	22,647	22,932	23,176	23,255	23,334	23,224
Two	3,382	3,537	3,678	3,726	3,664	3,637
More than two	162	168	181	187	178	156
Weight (Gross)						
0 - 1,750 kg	23,019	23,296	23,557	23,639	23,721	23,590
1,751 - 5,700 kg	3,201	3,362	3,446	3,500	3,443	3,432
5,701 - 13,500 kg	298	300	325	311	308	310
13,501 - 45,500 kg	274	315	352	389	395	399
45,501 - or more kg	235	244	275	282	279	272
Total Registrations	26,969	27,517	27,955	28,121	28,155	28,003

Note: Data for 1991 contained 2 Airships.
Source: Transport Canada; TP 220 as of December 31 of each year.

The Aerospace Industry – Made in Canada

Canadian Aerospace Ltd. of Toronto was organized in December 1916, one of the first companies to supply aircraft and parts to flight training units in Canada and the United States. In the 21 months it existed, 2,900 airplanes were built with a total value of \$14 million. In 1991, over 75 years later, most of the aerospace industry was concentrated in Ontario and Quebec.⁴³ The net value of shipments of aircraft and aircraft parts included the receipts of custom and repair revenue and goods made under contract. Except for a small decline in 1976 and the recessionary period in the early 1980s, net shipments saw steady growth (see Table 7.10). For example, Canada exported 118 new, complete aircraft valued at \$607 million to 25 different countries in 1981. This compared to 275 new, complete aircraft, valued at \$1.4 billion, to 17 countries in 1991. (5,6)

⁴³ Other provinces have manufacturers such as Bristol Aerospace in Manitoba, North West Industries in Alberta and IMP Industries in Prince Edward Island.



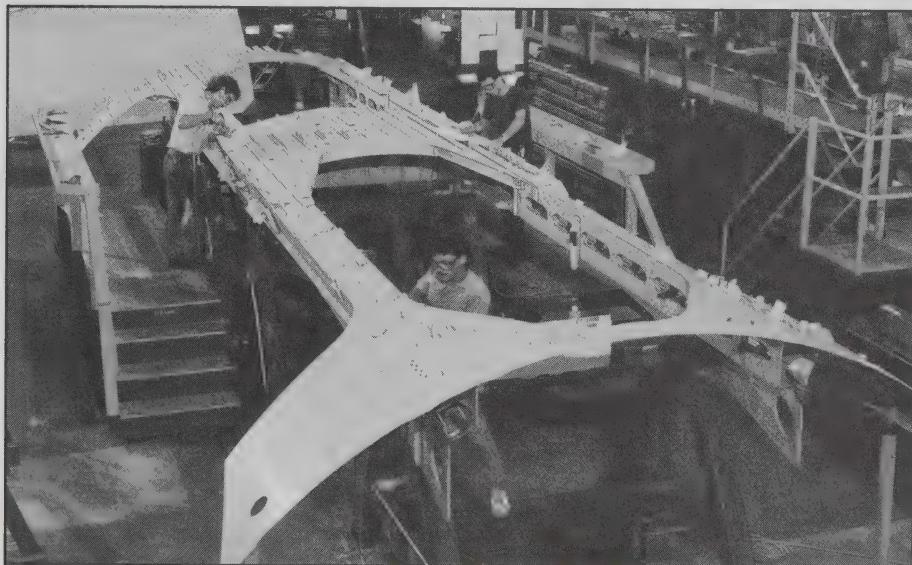
The Canadair Regional Jet production line at
Montréal International Airport, courtesy Canadair

Table 7.10

The Value of Aviation Equipment Traded Internationally, 1975-1991

Year	Imports (US \$'000)			Exports (US \$'000)			(C \$'000)
	Aircraft and Engines	Engines and Parts	Aircraft Parts Only	Aircraft and Engines	Engines and Parts	Aircraft Parts Only	
1975	290,921	221,607	182,804	29,987	210,242	181,438	744,437
1976	110,418	134,065	161,476	79,403	214,476	159,601	724,353
1977	89,246	161,242	188,617	66,651	226,066	192,930	816,055
1978	325,583	246,467	267,712	117,873	308,546	264,582	1,280,964
1979	679,426	291,570	393,285	183,337	409,733	412,429	1,706,439
1980	860,439	371,947	594,080	255,522	489,050	658,830	2,303,512
1981	1,252,077	469,692	628,635	456,401	707,551	632,575	2,549,517
1982	601,011	374,676	547,211	600,388	502,916	628,821	1,999,497
1983	808,199	456,361	550,184	327,443	486,834	705,648	1,848,986
1984	864,982	597,130	755,282	344,826	647,754	793,307	2,374,741
1985	1,095,290	659,217	1,023,619	351,861	633,518	1,111,034	2,857,797
1986	1,117,432	695,796	1,197,696	382,397	720,675	1,282,464	3,370,384
1987	750,563	734,587	1,274,227	351,695	838,557	1,349,519	3,757,900
1988	2,553,669	833,237	1,145,842	645,145	888,450	1,130,568	4,437,800
1989	1,379,046	932,332	1,090,713	940,262	1,122,302	1,180,972	5,231,500
1990	1,098,420	833,861	1,208,641	1,263,701	1,237,365	1,561,256	..
1991	1,613,384	751,346	1,089,207	1,703,874	1,118,812	1,583,002	..

Sources: Statistics Canada: Catalogue Nos. 42-203, 42-251.



Canadair produces six major fuselage components for the Airbus A340 airliner, courtesy Canadair

Canadian exports of transportation products (including a two-way trade in automobiles) maintained an approximate 10-15% of the world's export share over the years. Canada was also among the world's top five exporters of (new and used) aircraft and parts, with a 4% share of world exports in 1989. We were traditionally a net importer of completely assembled aircraft with engines and a net exporter of aircraft engines and aircraft parts.

Table 7.11

The Value of Canadian Dollar Relative to the U.S. Dollar

Year	Yearly Averages U.S. Dollar	Amount
1975		1.0173
1976		0.9861
1977		1.0635
1978		1.1402
1979		1.1715
1980		1.1690
1981		1.1990
1982		1.2341
1983		1.2324
1984		1.2948
1985		1.3652
1986		1.3894
1987		1.3260
1988		1.2309
1989		1.1842
1990		1.1668
1991		1.1458

Note: The above rates are nominal quotations in terms of Canadian dollars.

Source: Bank of Canada.

Almost 70% of Canadian exports were to our southern neighbour, the United States. In 1989, Canadian exports of aircraft and parts were valued at U.S.\$2 billion. (5,6)

Because the imports and exports are expressed in terms of U.S. dollars (unlike the value of shipments which was expressed in Canadian dollars), the value of the Canadian dollar relative to other world currencies, as well as the quantity of manufactured goods traded, must be taken into account (see Table 7.11). For example, the value of the Canadian dollar was low in 1986 when the value of exports was high.

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- (2) "Competition is Alive and Well", by Sam Barone, Air Transport Management, Oct. 11, 1990.
- (3) Air Canada Annual Report, 1981, page 13.
- (4) "Development of Aviation in Canada 1879-1948", by J.A. Wilson, C.B.E., Department of Transport, Air Services Branch, page 7.
- (5) Aircraft and Aircraft Parts Manufacturers, Statistics Canada, Catalogue No. 42-203, 1975-1986.
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- (7) "Assessing Canada's position in world trade – the statistical dimension", by R. Purdue and S. Mozes, Summary of Canadian International Trade, Statistics Canada, Catalogue No. 65-001, Oct. 1991.
- (8) "Airline Management" by Charles F. Banfe.
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CHAPTER 8

Governing Aviation



Governing Aviation

The laws that control Canada's skies are largely a response to the technology and demands of the moment; they are not, in other words, steeped in custom and tradition as are so many of the laws which govern movement on the ground.

In 1867, the British North America Act gave federal and provincial governments separate legislative jurisdictions. But no one was thinking of the skies at that time. The roar of even the earliest air machines was yet to be heard so there was no legislative action in this regard. Once the flying machines arrived, however, the law had to catch up.



Fairchild 71, National
Aviation Museum

While this chapter focuses on these aviation regulations in Canada, a brief overview is also presented on government funding within the aviation industry. This chapter also depicts safety regulations in Canadian aviation and portrays our safety record.

Canadian Air Law Foundations

The Aerial League of Canada, formed in 1919, spearheaded the drive to establish flying as a useful and profitable activity. The League, which was comprised of private citizens, promoted aviation and developed standards for the testing and certification of student pilots. Eventually, it was overtaken by the Flying Club movement.

In 1919, Parliament passed a far-sighted piece of aviation legislation that became the basis of Canadian air law for more than half a century. The Air Board Act governed the naming of air routes, the licensing of aircraft and personnel and the investigation of air accidents. Initially, the executive arm of this Act, the Air Board, reported directly to Parliament. The Air Board, as such, ceased to exist when the Department of National Defence took over responsibility for aviation in 1923.

The Air Board's responsibility included, amongst other things, the air defence of Canadian skies and the organization and administration of an air force. In 1920, the Canadian Air Force (later the Royal Canadian Air Force) was created and assumed as part of its mandate, the responsibility for patrolling Canadian waters, as well as for flying on forestry and water-power development missions.

The flying clubs and municipal governments worked together to finance airport construction during the 1920s while consulting the federal government on planning and operations. By the 1930s, however, the financial burden had become too heavy for the municipalities and the federal government assumed a greater share of the costs.

More than 50 years later, the federal government through its Department of Transport, continues this support contributing tens of millions of dollars each year to the operation of municipal and other airports. In addition, many more millions go towards the construction of airports and runways, the procurement of water bombers and professional and special services.

Considerable debate between the provinces and the federal government, over who should exercise the regulation and control of the airspace, continued to be an issue during the 1920s and 1930s. It resulted in a court case in 1932 in which the provinces challenged Ottawa's right to legislate aviation. The case went to the Privy Council in London, England where it was finally resolved in favour of the federal government. From then on, federal authority prevailed over all aviation matters.

Federal Regulation of Civil Aviation

The first large change in the federal regulation of civil aviation occurred in 1936. At that time, a massive government reorganization resulted in the creation of the Department of Transport. Aviation matters received a permanent home under the authority of this new department as did many other aspects of the regulation of the Canadian transportation industry.

Thus, the Department of Transport (today's Transport Canada) took complete responsibility for Canada's non-military flying. This was done by implementing the Department of Transport Act (1936)⁴⁴, the Trans-Canada Air Lines Act (1937) and the Transport Act (1938).⁴⁵⁽¹⁾

The Air Transport Board

In 1944, the government set up an independent regulatory body. This new Air Transport Board was then empowered to regulate the economic aspects of commercial aviation.

The Air Transport Board was preceded by a government policy position very clearly in favour of the control of commercial aviation. In an effort to protect the airlines against cut-throat competition, the government introduced legislation to allocate routes to companies already in the field and to prevent competition from newly-formed companies.

⁴⁴ This Act administered civil aeronautics.

⁴⁵ This Act administered route licenses, tariffs and other related matters.

To determine who could fly what routes, the Board stood by two key rules of thumb: public convenience and necessity. The Board was to determine if the proposed service was in the public interest, if operators had a reasonable chance of financial success and if they were willing and able to provide the service.

For the first time, air carriers needed a licence to operate and certificates attesting to the safety of their services. The Board also had the authority to investigate complaints on rates and tariffs charged by carriers. This responsibility continued until 1967.

A National Transportation Policy

The National Transportation Act, in 1967, gave Canada its first comprehensive transportation policy. Before this Act, transportation policy focused almost entirely on non-transportation issues and concerns such as nation-building. This new Act was the first comprehensive multi-modal statement premised on the principles of transportation. Transportation was looked at from a more global perspective instead of separate policies for individual modes. It created a single regulatory body with commissioners representing each mode. (2)

The executive arm of this Act was the Canadian Transport Commission (CTC). The Canadian Transport Commission brought together all the boards previously responsible for individual transportation modes. It thus, inherited the powers and duties of the Air Transport Board, the Board of Transport (or Railway) Commissioners for Canada, and the Canadian Maritime Commission.

The functions previously carried out by the Air Transport Board now fell under the Air Transport Committee (ATC) of the Commission. The Air Transport Committee became the economic regulator of the Canadian air transport industry and played an integral role with Transport Canada and External Affairs in negotiating international air transport agreements.

The decade that followed the new National Transportation Act was one of enormous change for Canadian aviation. Short and medium range jet aircraft came on the market. Turbo-props replaced old DC-4s and DC-6s and proved more economical to operate. The economy expanded enormously with Gross Domestic Product (in constant 1971 dollars) increasing 59%, from \$68 billion in 1967 to \$108 billion in 1977. The services of air carriers expanded as never before.

Services expanded on the international front as well. In 1964, Canada's two major carriers, Air Canada and Canadian Pacific Air Lines shared the foreign routes as follows. Canadian Pacific was the sole Canadian carrier for Australia, New Zealand, Southern Europe, Southeastern Europe, Latin America and the now rapidly expanding Pacific and Asian areas. Air Canada was Canada's flag carrier for the United Kingdom, the rest of Europe and the Caribbean. A legacy of this era was Air Canada's access to the United States market, negotiated under a separate bilateral agreement, and Canadian Airlines' access to the Pacific Rim.

A new challenge to the policy of regulated competition came out of this tremendous growth. Until the mid-1980s, the planning and implementation of civil aviation was entirely a matter of government control. The federal government controlled route allocations and competition between regional and local carriers and the major carriers.

The structures in place were constantly being revised, even before the policy reviews of the mid-1980s. Canadian Pacific Air Lines was allowed to operate flights between Montréal and Vancouver in 1967, for example, and was permitted to operate the first transborder route, Vancouver-San Francisco, given to a carrier other than Air Canada. It was allowed to carry up to 25% of Canada's transcontinental air traffic, in direct competition with Air Canada in 1970. Domestic advance booking charters were authorized and provided competition with the majors in long-haul transcontinental flights in 1978. By 1979, Canadian Pacific Air Lines was permitted to operate in full competition with Air Canada as all capacity restrictions on transcontinental service were removed. Wardair would be licensed to operate domestic charters in addition to their well established international charters in the next year. In the end, however, the government still regulated conditions of service such as routes, tariffs, frequencies, equipment types and en route stops for each carrier licence.

The move to liberalize airline regulation began in 1984. Few industries in Canada were as regulated as aviation or as dependent on government assistance up to this time. Only the federal government was in a position to provide the level of support and control that the high cost of airports, the protection of sovereignty and the need to control potentially destructive levels of competition all required.

An in-depth review of the regulation and control of Canadian civil aviation began in July of 1985. The then Minister of Transport, Don Mazankowski, published proposals for economic regulatory reform in a paper entitled "Freedom to Move". In it he stated that:

"Unfortunately, our regimes of economic regulation in transportation have kept pace with neither changing circumstances in our economy nor the transportation system itself. The last major change in regulation took place nearly 20 years ago with the passage of the National Transportation Act. In the environment of the 1980s, the existing regulatory regime represents an obstacle to economic growth, innovation and competitiveness." (3)

Nonetheless, the Canadian Transport Commission continued to control route allocations and competition between domestic carriers until this role was changed by the policy review of 1987.

The National Transportation Act of 1987 initiated economic deregulation in the air industry. With it, the National Transportation Agency which was formed at the same time, addressed market entry, licensing, northern routes, posting of fares, and termination of service. Air policy changed from protecting the air carrier and in particular the national flag carrier, to protecting the consumer.

February 27, 1917 – The first military flying in Canada took place when the Royal Flying Corps of Canada began training with 3 Curtiss JN-4(Can.) aircraft at Long Branch Aerodrome near Toronto. (4)

In southern Canada, for example, domestic air transportation regulations were significantly reduced (see Figure 3.7). Carriers needed only to prove that they were Canadian-controlled and fit, willing and able to provide air service in order to

gain market entry in this region. The public convenience and necessity criteria still applied in northern Canada and remote areas, however, a new reverse-onus test was available to resolve disputes over routes. Reverse-onus allowed new carriers to enter a market unless the existing carrier could demonstrate that this new licence should not be granted.

The public had to be informed of the terms and conditions of fares under this new Act but these fares no longer needed to be submitted to the government for approval. The Act also monitored the industry for adequate and fair competition and regulated the reduction and termination of air services. This legislation was still in effect in 1991. (5)

Another large change in government participation in the aviation industry occurred between 1986 and 1989 when the provincial governments of Quebec and Alberta privatized Québecair and Pacific Western Airlines and the federal government sold its ownership of Air Canada. These moves compelled these airlines to compete with the same opportunities and conditions as all other airlines.

Facts and Figures

The federal government provided key financial support of air transportation since the 1930s in constructing, operating and maintaining air facilities. Revenues, such as those collected from the air transportation tax, were used to help defray the costs of these facilities. The Air Transportation Tax was levied on the sale of airline tickets in order to recover part of the costs of flight navigation systems and airport facilities provided by Transport Canada.

The Air Transportation Tax was the only direct tax levied on domestic air travel tickets until January 1991, when the current federal goods and services tax took effect. The Air Transportation Tax generated progressively larger revenues from its inception in the 1975/76 fiscal year until the 1988/89 fiscal year. This trend reversed between the 1988/89 and 1991/92 fiscal years as the number of air passengers declined and resulted in a 4% decline in revenue generated from the Air Transportation Tax. In the fiscal year 1991/92, revenues totalled \$480 million from this source. (see Table 8.1).

A second direct tax, the Goods and Services Tax (GST), was introduced in Canada as a replacement to the manufacturers sales tax on January 1, 1991. This tax of 7% was applied to all passenger tickets purchased within Canada or purchased outside of Canada if the first enplanement was within Canada. It applied to domestic and transborder trips but not to trips without a stopover to or from other foreign countries. Air freight charges were also taxed but only on domestic shipments.

When the Goods and Services Tax was introduced, the Air Transport Tax was reduced from 10% of the ticket price plus \$4 (to a maximum of \$50), to 7% of the ticket price plus \$10 (to a maximum of \$40) for flights within Canada or the United States. The flat rate of \$19 on overseas fares was increased to \$40. This placed a greater tax burden on passengers of short-haul domestic flights.

The potential negative impact on foreign tourists to Canada was recognized with the implementation of the Goods and Services Tax. To offset this effect, a rebate was offered to tourists for the amount of the tax paid on purchases of most goods and short-term accommodation charges. This rebate was to be claimed within a year of the purchase.

A third federal tax, the fuel excise tax, also indirectly affected the cost of air travel in Canada. This tax was levied on fuel purchases before the provincial sales tax and the goods and services tax were applied. Air carriers could recover the amount of goods and services tax paid on fuel through the input tax credit provision.⁴⁶(6)

⁴⁶ The amount of goods and services tax and fuel excise tax collected from the air industry alone could not be determined.

Table 8.1
**Federal Government Revenue and Expenditures on Air Transportation, for the Fiscal Years 1960/61, 1965/66, 1970/71, 1975/76,
 1980/81 to 1991/92**

	1960/61	1965/66	1970/71	1975/76	1980/81	1981/82	1982/83	1983/84								
	\$('000)															
Revenues																
Air Transportation Tax																
Expenditures	-	-	-	30,000	166,000	189,000	198,000	207,000								
Transportation and Communications	377,008	598,535	582,726	1,524,000	2,546,000	2,286,000	2,819,000	3,190,000								
Air	88,130	77,619	186,634	635,000	1,293,000	790,000	874,000	1,007,000								
Road	104,964	133,136	69,099	112,000	161,000	159,000	175,000	196,000								
Rail	43,455	122,063	90,310	385,000	406,000	455,000	852,000	928,000								
Water	107,561	217,616	149,089	269,000	440,000	539,000	538,000	650,000								
Telecommunications	29,838	43,499	69,728	63,000	120,000	162,000	184,000	179,000								
Other Transportation and Communications	3,060	4,602	17,866	60,000	126,000	181,000	196,000	230,000								
Total Government Expenditures	6,922,848	8,832,324	16,002,169	37,464,000	67,829,000	79,381,000	93,766,000	102,961,000								
1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92									
Revenues																
Air Transportation Tax																
Expenditures	226,000	306,000	347,842	435,005	498,942	493,748	488,418	480,000								
Transportation and Communications	3,733,000	3,457,000	3,536,015	3,688,653	3,727,062	3,610,180	3,639,766	3,366,450								
Air	1,262,000	1,257,000	1,302,007	1,267,824	1,336,976	1,464,267	1,511,354	1,281,052								
Road	214,000	223,000	165,639	236,292	241,511	265,188	357,172	249,007								
Rail	1,013,000	751,000	920,461	1,183,625	1,015,227	689,723	758,944	812,444								
Water	860,000	848,000	786,595	709,182	766,049	791,577	622,663	642,972								
Telecommunications	186,000	187,000	183,288	203,677	213,061	232,271	248,873	257,564								
Other Transportation and Communications	198,000	191,000	178,025	88,053	154,238	167,154	140,760	123,411								
Total Government Expenditures	115,039,000	116,911,000	120,826,548	130,720,053	136,334,246	148,747,322	158,970,877	164,807,390								

Note: Data on a Financial Management System Basis.

Data for 1991/92 are revised estimates.

Sources: Statistics Canada, Public Accounts, Estimates, Budget Speeches.

Government cost recovery policies have taken a step towards true 'pay as you go' procedures. Until 1991, airlines were not directly charged for the full cost of transportation which would have then been incorporated into the fare price. In other words, airports were not yet operated as profit or cost centres. Airlines were used instead as tax collectors and the tax revenue collected was used to cover air infrastructure costs. These circumstances made it difficult for airports to market their services, raise funds or acquire non-aeronautical equipment. Government spending on aviation, therefore, was still required to support air freight and general aviation, as well as regular passenger aviation. This support totalled \$874 million in the 1982/83 fiscal year and almost doubled over the next ten years. In the 1991/92 fiscal year, the equivalent expenditures came to \$1.3 billion (see Table 8.1).

The government spent an increasing proportion of the total amount spent on Transportation and Communication, on air transportation. In the fiscal year 1982/83, under a third of all transportation and communication expenditures went to air. This proportion increased to around 40% ten years later (see Table 8.1).

The amount of government spending on air transportation in relation to total government expenditures has declined, although air transportation remained a significant part of overall government expenditures. The \$1.3 billion spent in the 1991/92 fiscal year, for example, was 0.78% of total government expenditures, compared with 1.00% of ten years ago (see Table 8.1).

If the assumption was made that air expenditures were only related to passenger air travel and if the differences between fiscal and calendar accounting were ignored, a comparison between the amount of government spending and passenger distance travelled showed a different picture. Indeed, expenditures increased from the \$0.010 cent per passenger-kilometre during the 1970/71 fiscal year to \$0.022 cents in 1991/92. In fact, government expenditures per passenger-kilometre were consistently over \$0.020 cents since 1983/84 (see Table 8.1).

It is interesting to look at the breakdown of Transport Canada's expenditures. Two major groups came into being with a reorganization at Transport Canada at the beginning of 1986. As part of this restructuring, the branch of Transport Canada which was previously concerned with aviation matters, the Canadian Air Transportation Administration (CATA), was split into two groups; the Aviation Group and the Airports Authority Group. The Canadian Air Transportation Administration was responsible for the regulation and administration of domestic airway facilities and national airport system until the 1986 organization.

In 1991, the Aviation Group maintained all air traffic control services and aviation regulation. It covered licensing and certification, legislation and enforcement, medicine (matters related to the health and security of flight crew and passengers) as well as international technical liaison. The Aviation Group also provided flight services for Transport Canada's aircraft fleet.

The other half of Canadian Air Transportation Administration's duties were assumed by the Airports Authority Group. This group managed Canada's airport system through the maintenance of Transport Canada's owned and operated airports.

Transport Canada operated 122 of the 1,255 licensed airports in Canada in 1991. The Airports Authority Group was specifically responsible for the maintenance of these airports. In this regard, it supervised a broad spectrum of activity, ranging from the supervision of airport concessions and security, to airport construction, engineering, building and runway maintenance and overall marketing activities.

Combined expenditures for the Air Transportation Group and the Airport Authority Group increased from approximately \$1.3 billion the fiscal years 1986/87 and 1988/89, to about \$1.5 billion in 1989/90 and 1990/91 and returned to around \$1.3 billion again in 1991/92. Operating revenues increased 53% to \$1.1 billion between the fiscal periods of 1986/87 to 1991/92 (see Table 8.2).

Remarkably, the revenues collected for the Airports Authority Group over this period were greater than the expenditures resulting in negative net expenditures. The Airport Authority Group showed profits consistently since its inception in 1987/88.

Changes in Transport Canada's capital expenditures for air transportation over the 1986/87 to 1991/92 period were attributed in part to the initiation of the Canadian Automated Air Traffic System (CAATS) and the Microwave Landing System (MLS) as well as the completion of the Radar Modernization Project (RAMP). Changes in revenues collected reflected fluctuations in price, the volume of passengers and aircraft movements and the amount of air transportation tax levied.

Table 8.2

Federal Government Expenditures on Air Transportation, for the Fiscal Years 1986/87 to 1991/92

Fiscal Year	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
(\$'000,000)						
Air Transportation/ Aviation Group (Net)						
Operating Costs	175	302	212	275	232	70
Capital Costs	337	156	202	242	235	320
Transfers	38	-	-	1	2	1
Total	550	458	414	518	469	391
Airports Authority Group (Net)						
Operating Costs	..	(348)	(330)	(353)	(295)	-
Capital Costs	..	255	246	217	150	-
Transfers	..	33	43	48	35	-
Total	..	(60)	(41)	(88)	(110)	-
Operating Revenues Credited to Appropriations						
Air Transportation Tax	348	435	499	494	488	480
Rentals, Fees and Other Charges	402	428	465	503	563	669
Total	750	863	964	997	1,051	1,149
1992 Budget Expenditure Control Plan	-	-	-	-	-	(360)
Transport Commission, National Transportation Agency ¹	2	7	..	-	-	-
Portion of Other Departmental Expenditures	-	-	-	37	101	101
Air Transportation Expenditures²	1,302	1,268	1,337	1,464	1,511	1,281

¹ No data available on Expenditures in 1988/89.

² Preliminary data for 1991/92 indicate that actual expenditures will exceed revised estimates by \$200 million and will total approximately \$1,481 million rather than \$1,281 published in July 1992.

Note: Data are on a Financial Management System Basis.

Sources: Public Accounts, Estimates, Budget Speeches.

Transport Canada initiatives to accommodate the growth at Canada's airports included recruiting and training more air traffic controllers, plans to construct three new runways at Pearson International and one at Vancouver, contracting a private developer to build and operate the first Canadian private air terminal, Terminal 3 at Pearson International airport and privatizing airports through local airport authorities.

Calgary International, Vancouver International, Edmonton and Montréal airports were transferred to local authorities in 1992, with additional interest expressed at Winnipeg, Thunder Bay, Windsor, Quebec City, Moncton, Victoria and Kamloops. Local airport authorities now operated as profit centres with the ability to advertise and to raise capital as they see fit

These capital expenditures contributed to increased safety in the aviation transportation mode despite the large growth in the number of passengers and aircraft traffic. Canada has been a world leader in safety issues. In 1990, smoking was banned on all domestic and international flights of less than six hours duration, with smoking prohibited on flights longer than six hours to be phased in later.

The Transportation Safety Board

A key body in the administration of safety in civil aviation was the Canadian Aviation Safety Board (CASB). Established in 1984 with the passage of the Act of the same name, its purpose was to improve aviation safety in Canada.

The creation of the Canadian Aviation Safety Board marked a significant step in the evolution of Canada's approach to aviation safety. The Commission of Inquiry on Aviation Safety had, as one of its key recommendations in 1981, the establishment of an independent safety board. As the report stated:

"The analysis of the aviation safety system must be that of an independent tribunal. The function of the tribunal should be much more than the investigation and reporting of accidents and incidents, as important as that function is. The tribunal's sole concern must be that of aviation safety." (7)

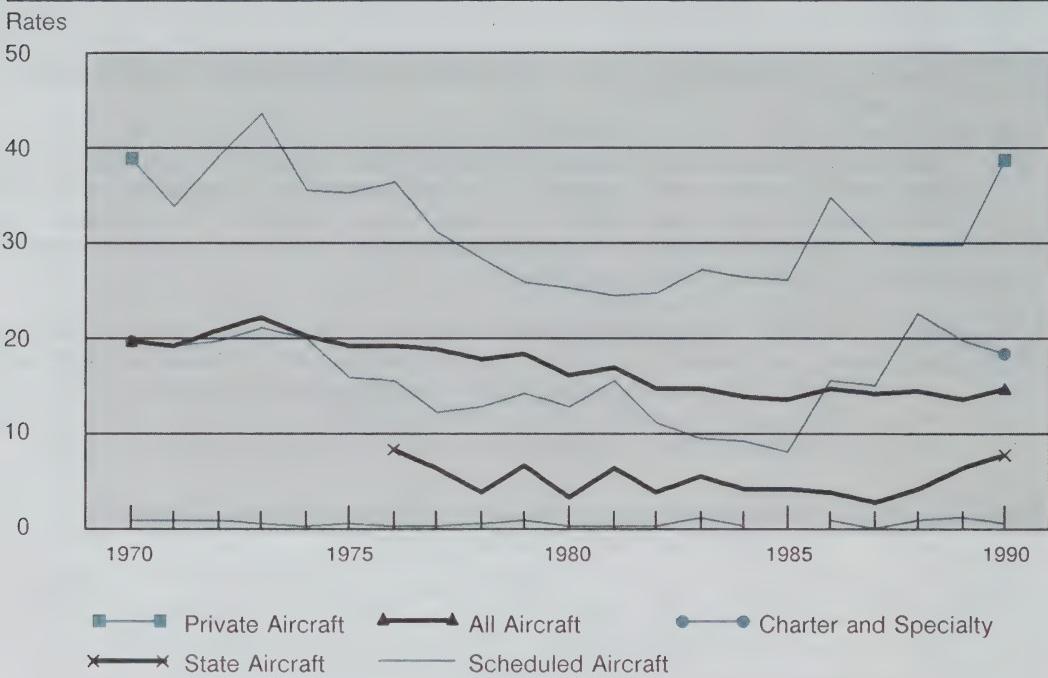
Thus, the Canadian Aviation Safety Board was set up to operate independently of any government department and to report directly to Parliament. It operated until 1990 when the Canadian Transportation Accident Investigation and Safety Board (TSB) was established with the proclamation of the Act with the same name.

The purpose of the Transportation Safety Board (TSB) was to advance safety in all modes of transportation. It had exclusive jurisdiction in the investigation of all accidents and incidents in Canada. It made recommendations to reduce or eliminate safety deficiencies, could hold public inquiries and was required, in turn, to make reports on its findings public, as appropriate. It also had investigation teams on 24-hour alert which could be dispatched to gather information on the causes of accidents in Canada.

It released reports with recommendations for improved aviation safety after investigating accidents. The Act stipulated that the appropriate Minister consider the recommendations and reply within 90 days in order to ensure that these recommendations were acted on.

The aircraft accident rate averaged about 19 per 100,000 flying hours in Canada over the 1970s. In the next decade, this rate declined substantially, in spite of a 66% increase in the average number of hours flown (see Figure 8.1).

Figure 8.1
Accident Rates per 100,000 Flying Hours, by Type of Operation, 1970-1990



Sources: *Transportation Safety Board of Canada: Annual Reports and Internal Reports.*
Statistics Canada: Catalogue No. 51-206.

While aviation safety is a function of the time aircraft spent in the air, it is also directly related to improvements in technology. Aviation in Canada literally 'took off' with the introduction of jet aircraft in the late 1950s, with passenger loads doubling and even tripling. Airlines could now carry more people in less time well above the weather, making air travel an attractive alternative to other travel modes.

Air traffic control also improved, with vastly enhanced radar systems, both on the ground and in the air. Weather forecasting came of age, with satellite photography and state-of-the-art meteorological computers. The improvement in air technology meant more flying activity, under improved circumstances, and consequently led to a better safety record.

Canada's commercial carriers increased flying hours by 173% from 1960 to 1990, totalling just under 840 thousand hours in 1960 and close to 2.3 million hours in 1990. The number of accidents per 100 thousand hours flown during this time period, for all of commercial aviation, declined by 44% (see Table 8.3).

Individual categories of air services within commercial aviation (scheduled, charter, and specialty) and private aviation experienced similar trends to varying degrees (see Figure 8.1).

Scheduled and Charter Air Services

The number of hours on scheduled and charter air services more than trebled, from about 665 thousand in 1960 to 2.3 million in 1990. The accident rate for these operations taken together, however, declined during this period, from a 1960 total of 9.3 accidents per 100 thousand hours flown to a 1990 level of 5.1 accidents (see Table 8.3).

The accident rate for charter services was higher than for scheduled services from 1976 to 1990. While charter services logged more hours than scheduled services until 1987 (with a ratio of 1.5 to 1), its accident rate was about 10 times higher than that of scheduled services. The accident rate for charter services decreased up to 1985 but subsequently reversed (see Figure 8.2).

The high accident rates for bush flying air services were attributable partly to the terrain and facilities in the remote areas of Canada where these charters were mostly flown. This was not the case for chartered holiday air travel.

**Table 8.3
Canadian Commercial Aviation and Accidents, 1960-1991**

Year	Total			Commercial Scheduled and Charter Operations			Specialty and Flying Training		
	Hours Flown ('000)	Number of Accidents	Accidents per 100,000 Hours Flown	Hours Flown ('000)	Number of Accidents	Accidents per 100,000 Hours Flown	Hours Flown ('000)	Number of Accidents	Accidents per 100,000 Hours Flown
1960	839	126	15.0	665	62	9.3	174	64	36.8
1961	821	117	14.4	637	65	10.2	185	53	28.6
1962	803	107	13.3	617	74	12.0	186	33	17.7
1963	827	104	12.6	626	70	11.2	202	34	16.8
1964	912	115	12.6	677	59	8.7	235	46	19.6
1965	1,084	143	13.2	767	72	9.4	318	71	22.4
1966	1,315	179	13.6	859	104	12.1	457	75	16.4
1967	1,508	193	12.8	958	108	11.3	550	85	15.4
1968	1,588	175	11.0	1,014	106	10.4	574	69	12.0
1969	1,613	223	13.8	1,087	131	12.0	526	92	17.5
1970	1,605	219	13.6	1,181	140	11.9	424	79	18.6
1971	1,753	243	13.9	1,237	140	11.3	515	103	20.0
1972	1,855	262	14.1	1,307	165	12.6	549	97	17.7
1973	2,067	312	15.1	1,419	184	13.0	648	128	19.7
1974	2,221	318	14.3	1,495	174	11.8	726	144	19.8
1975	2,387	275	11.5	1,550	152	9.8	837	123	14.7
1976	2,392	283	11.8	1,541	166	10.8	851	117	13.7
1977	2,500	232	9.3	1,629	123	7.5	871	109	12.5
1978	2,578	263	10.2	1,720	139	8.1	859	124	14.4
1979	2,836	314	11.1	1,921	187	9.7	915	127	13.9
1980	3,002	299	10.0	2,064	172	8.3	938	127	13.5
1981	2,793	327	11.7	2,004	172	8.6	789	155	19.6
1982	2,454	197	8.0	1,788	104	5.8	666	93	14.0
1983	2,235	157	7.0	1,682	97	5.8	553	60	10.8
1984	2,290	152	6.6	1,753	75	4.3	537	76	14.2
1985	2,436	135	5.5	1,913	58	3.0	523	77	14.7
1986	2,365	170	7.2	1,948	87	4.5	418	83	19.9
1987	2,555	172	6.7	2,092	100	4.8	462	72	15.6
1988	2,052	211	10.3	2,073	133	6.4	..	78	..
1989	2,238	209	9.3	2,236	128	5.7	..	81	..
1990	2,259	190	8.4	2,259	115	5.1	..	75	..
1991	2,098	..	..	2,098	..	..	..	..	..

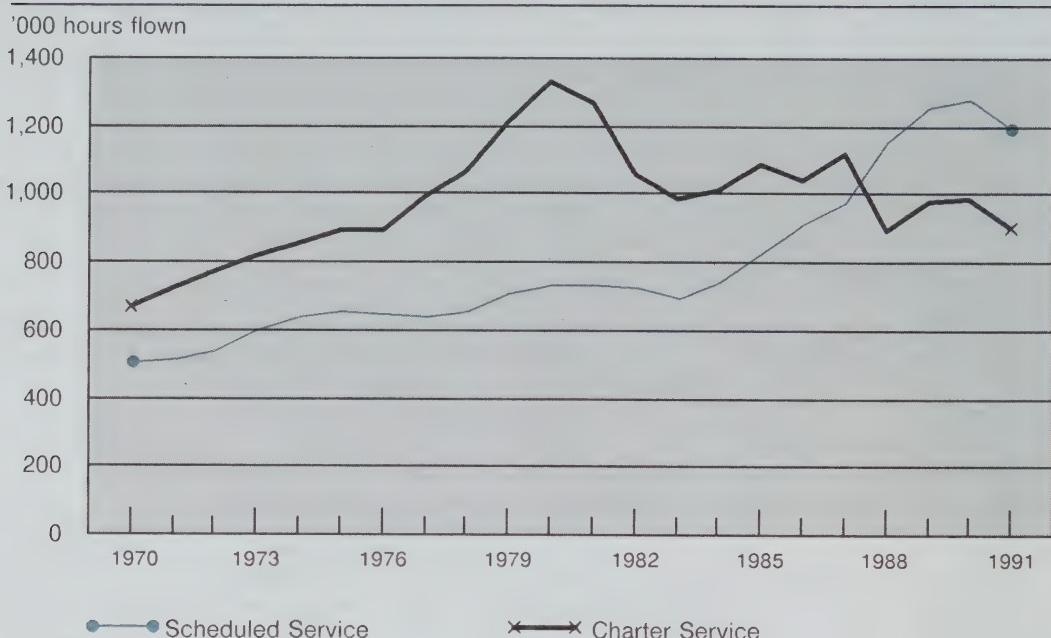
Note: Data for Commercial non-revenue flights, Flight Training and Flying Clubs are not included. Data for Commercial non-scheduled flights are included.

From 1960-1987, Levels I-V;

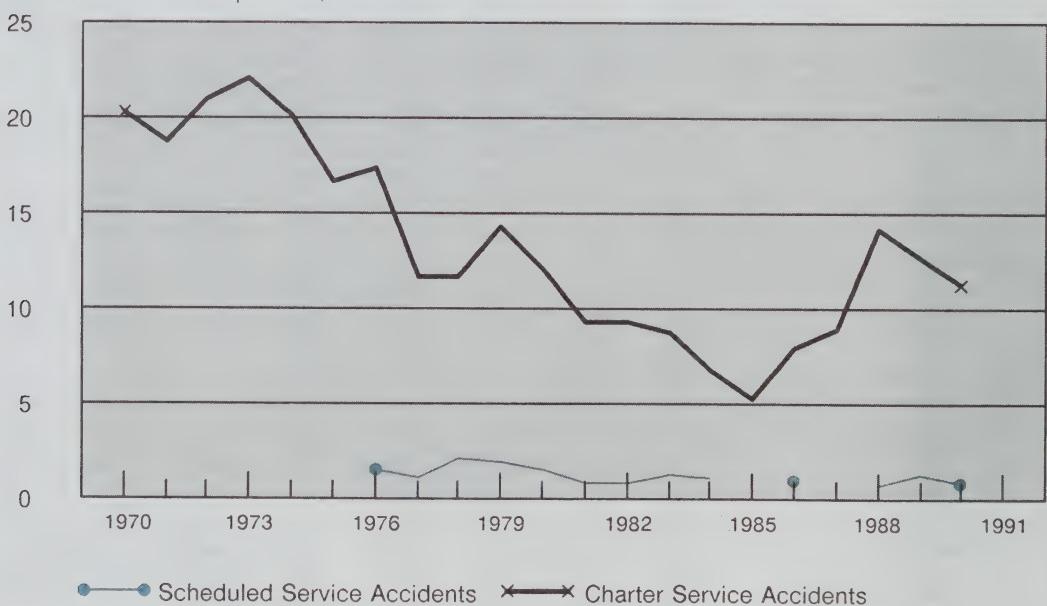
1988-1991, Levels I-IV.

Sources: Transportation Safety Board of Canada: Annual Reports and Files.
Statistics Canada: Catalogue No. 51-206.

Figure 8.2
Commercial Scheduled and Charter Operations - Hours Flown and Number of Accidents per 100,000 Hours Flown, 1970-1991



Number of accidents per 100,000 hours flown



Note: From 1970-1985, non-scheduled hours are included in scheduled hours.
 1985, 1987 and 1991 data for scheduled service accidents are not available.
 1991 data for charter service accidents are not available.

Sources: Transportation Safety Board of Canada: Annual Reports and Files.
 Statistics Canada: Catalogue No. 51-206.

Flying Training and Other Specialty Services

The number of hours for specialty services increased almost three-fold between 1960 and 1987, at the same time as the accident rate dropped 50% (see Table 8.3).

The accident rate was traditionally very high, largely due to the nature of the services being offered. Activities in this area, for example, ranged from the flying training, to the water bombing of forest fires, to agricultural spraying at low altitudes.

Nonetheless, accident rates decreased. There were 36.8 for every 100 thousand hours flown in 1960 compared to 15.6 in 1987. This dramatic drop was partly due to increased pilot training, to improved weather forecasting, to the extension of better radio and radar on air routes and partly to improved technology, as safer and more advanced aircraft became available.

Private Aviation Services

Accident rates for private flying activity also dropped significantly. The accident rate stood at 36.4 in the 1960s, dropping to 33.7 in the 1970s and to 27.4 in the 1980s. The total number of hours flown annually for all private aircraft averaged 486 thousand hours in the 1960s. This increased to 979 thousand hours in the 1970s and to over a million hours in the 1980s (see Table 8.4).

As with commercial aviation, tougher licensing standards, better navigation systems and safer aircraft all helped to make the airways safer for private flying. Nevertheless, the accident rate in this category was still almost five times the rate of all commercial flying in 1989.

Table 8.4

Private Aircraft, Hours Flown and Accidents, 1960-1991

Year	Number of Private Aircraft	Hours Flown ('000)	Average Hours Flown	Number of Accidents	Accidents per 100,000 Hours Flown
1960	2,647	259	97.7	159	61.5
1961	2,999	295	98.4	156	52.9
1962	3,315	337	101.6	150	44.5
1963	3,512	385	109.5	122	31.7
1964	3,745	442	117.9	123	27.9
1965	4,134	503	121.7	159	31.6
1966	4,517	585	129.5	209	35.7
1967	4,940	656	132.8	231	35.2
1968	5,444	698	128.3	214	30.7
1969	5,912	700	118.4	247	35.3
1970	6,251	710	113.6	276	38.9
1971	6,908	725	105.0	246	33.9
1972	7,558	791	104.7	311	39.3
1973	8,356	796	95.3	347	43.6
1974	9,481	889	93.8	316	35.5
1975	10,395	991	95.4	351	35.4
1976	11,461	977	85.2	356	36.5
1977	12,255	1,272	103.8	395	31.1
1978	12,666	1,310	103.4	369	28.2
1979	13,245	1,328	100.3	343	25.8
1980	13,698	1,300	94.9	329	25.3
1981	14,080	1,332	94.6	326	24.5
1982	14,235	1,212	85.2	301	24.8
1983	14,219	1,150	80.9	313	27.3
1984	13,905	1,027	73.9	273	26.6
1985	13,044	934	71.6	244	26.1
1986	13,298	764	57.5	265	34.7
1987	11,821	859	72.7	257	29.9
1988	12,849	852	66.3	254	29.8
1989	12,239	761	62.2	227	29.8
1990	11,517	686	59.6	264	38.5
1991	11,704	679	58.0	198	29.1

Note: Private Aircraft with a Valid Certificate of Airworthiness on December 31 of each year.

Sources: Statistics Canada/Transport Canada: TP 220 and TP 2468.

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A Concluding Note

Aviation in this country has evolved into a sophisticated industry during the nearly 80 years since J.A.D. McCurdy made the first powered flight in Canadian air space. This would quite likely rival the dreams of Canada's first air explorers.

The vast spaces which confounded communications and transportation in the early decades of Canada's development have appeared to diminish with increasingly powerful aircraft capable of great speed and distances. Their presence also contributed to the development of a strong air transport industry and a vigorous private flying sector.

In 1991, Canada's airports accommodated 61 million people and processed 712 thousand tonnes of cargo. Close to 22 thousand private aircraft of varying descriptions, were on the country's air registry in this year. Even in the last decade, these statistics showed tremendous volume changes and, compared to air travel in the 1950s and 1960s, contributed to the expectation that air transport in Canada is skyward bound.

The statistics clearly showed that both commercial and most areas of private aviation rallied overall, even though the impact of economic downturn in the early 1980s and 1990s left its mark on all areas of civil aviation.

The commercial sector, if anything, emerged from the early 1980s to be stronger and leaner, with a fleet profile almost entirely changed from that of the 1960s and 1970s. Many of the big 'fuel-hungry' workhorses were gradually replaced with sleeker, fuel-efficient, smaller models more tailored to the operational realities of the 1980s, 1990s and beyond.

The industry, in addition, has now embarked on an era of deregulation and of Open Skies, both of which were good news for the traveller. Fares and rates, with increased competition, were less expensive. This, in turn, had an impact on the industry as more attractive fares encouraged a larger clientele 'on board' but narrowed profit margins.

Globalization has also become increasingly important and Canada's air carrier industry is well positioned in terms of other international carriers. Flying, once almost exclusively the prerogative of the rich, has evolved from being a luxury for few to a necessity for many. Aviation in Canada can be expected to continue the growth seen during the last 75 years as we progress towards the end of the decade, century and millennium.

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Glossary of Terms



Glossary of Terms⁴⁷

Advanced Booking Charter

A return passenger charter where one or more charterers contract for the entire passenger seating capacity of an aircraft for resale to the general public at a price per seat. The potential passengers observe a minimum prebooking deadline set with reference to the planned date of the outbound charter flight.

Aircraft belly hold

Refers to the underfloor cargo area of a passenger aircraft usually used for storage of passenger baggage and air cargo.

Aircraft movement

A takeoff, a landing, or a simulated approach by an aircraft.

Airport

An area of land or water that is used or intended to be used for the landing or takeoff of aircraft, including terminal buildings and facilities, if any.

The airport classification in Canada is as follows:

International Airport

Airport designated by Canada as an airport of entry and departure for international traffic, where Customs, Immigration, Public Health, Animal and Plant Quarantine and similar procedures are conducted. It must also meet the following conditions; – the airport is included in an ICAO Regional Air Navigation Plan as an airport for regular use by international scheduled air transport; the airport is designated by Revenue Canada, Customs and Excise as an international airport of entry; the airport supports a direct scheduled service to a foreign airport beyond the continental United States.

National Airport

The major airport at each provincial or territorial capital, if the major airport is not in the International airport class; or an airport supporting single plane service to at least four International airports such that the International airports are not served sequentially.

Regional Airport

Airport that supports single plane service to a National or International airport; and direct non-stop service to at least three other airports.

Local Commercial Airport

Airport that serves as a base or point of call named in a NTA licence for a commercial air service, but does not meet the criteria established for the International, National or Regional class definitions.

⁴⁷ Most of the definitions were taken from Statistics Canada publications, and from 'A Glossary of the Canadian Air Travel Industry', by the National Transportation Agency.

Local Airport

Airport that is not named as a base or point of call in a NTA licence for any commercial air service.

Area of service

The areas of services are defined below:

Transborder services

Service between points in Canada and Alaska, Canada and Hawaii, Canada and Puerto Rico and Canada and continental United States. Prior to 1970, statistics for flights to Hawaii were included under the heading Pacific and Orient.

Transatlantic and Polar services

Services between Canada and Europe, Canada and Greenland and between Canada and the Commonwealth of Independent States (former Soviet Union). This also includes flights between Canada and St. Pierre and Miquelon.

Southern services

Services between Canada and Bermuda, the Caribbean, Mexico, Central America and South America. Prior to 1970, statistics for flights to Florida were included under the heading Southern.

Pacific and Orient services

Services to Australia, Oceania, and Asia (excluding the Russian Federation). Prior to 1970, statistics for flights to Hawaii were included under the heading Pacific and Orient but are now included under Transborder.

Other foreign services

Services between points outside Canada.

Airship

A powered lighter-than-air aircraft.

Arriving

Traffic (passengers, mail and cargo) which lands at an airport in Canada. It includes traffic remaining on board aircraft as well as traffic deplaned.

ASC – Aviation Statistics Centre

A satellite unit of Transportation Division of Statistics Canada.

ATB – Air Transport Board

This Board was superseded in 1967 by the Air Transport Committee of the Canadian Transport Commission.

ATC – Air Transport Committee

Member committee of the National Transportation Agency and is responsible for regulating air transportation in Canada.

Average tonne-kilometre per aircraft hour flown

This ratio is calculated by dividing the total tonne-kilometres flown by the aircraft hours flown.

Balloon

An unpowered lighter-than-air aircraft.

BCATP – British Commonwealth Air Training Plan

A World War II plan for Allied pilot training in Canada.

Bilateral air agreement

An agreement or treaty between two nations contracting for reciprocal international air service between the two nations, such service to be operated by designated carriers of each nation. The agreement may include provisions for the type of aircraft used, intermediate stops en route, aircraft safety, taxation-free fuel, and arbitration procedures.

Cargo

Total freight and express carried. Cargo does not include mail or excess baggage. (see Goods)

Certificate of airworthiness

In Canada, there are two different certificates of airworthiness issued by Transport Canada: one, at the manufacturer's expense, approving the type design of an aircraft; the other must be applied for annually by the owner of each aircraft, and involves a mechanical inspection of the aircraft by a certified mechanic, and a test flight by a specially certified pilot.

Charter Service

A service offered for transport of passengers or cargo, in which one or more charterers obtain the exclusive use of an aircraft for one or more trips. The charter services are referred to Classes 4 (domestic) and 9-4 (international) licences.

City-Pair

A presentation of statistical data which is used to show the volumes of traffic flown between two specific cities. The two cities are those between which travel is authorized by a ticket or part of a ticket. They can represent direction, flow or origin and destination.

Civil aircraft

General term covering all non-military aircraft.

Combi-aircraft

Refers to any commercial aircraft that is simultaneously carrying a combination of aircraft unit load devices (U.L.D.'s) and passengers on the main deck.

Commercial aviation

Commercial aviation, in this publication, describes the activities of all major airlines and large commercial ventures, which specialize in the transport of passengers or goods for profit. These activities are defined as Levels I to III air carriers. (see General Aviation)

Current ratio

A measure of liquidity obtained by dividing current assets by current liabilities. This ratio is used to show the ability to pay current debts from current assets.

Debt-asset ratio

The percentage of capital provided by shareholders. This ratio is used as a measure of solvency and is obtained by dividing total debts by total assets.

Deep discount fare

Deep discount fares are those discounted by 30% or more off the full economy fares. Before 1985, deep discount fares were discounted by 25% or more off the full economy fare.

Departing

Traffic (passengers, mail and cargo) which takes off from an airport in Canada. It includes traffic remaining on board aircraft as well as traffic enplaned.

Deplaned

Traffic (passengers, mail and cargo) which lands and disembarks at an airport in Canada. It includes interline and intraline transfers, and traffic stopping over, as well as traffic terminating at an airport.

Depreciation

An amount of money charged to expense which is incurred in normal wear and tear on property and equipment (not replaced by current repair) as well as losses in serviceability occasioned by obsolescence, innovation, and changes in popular demand, or by action of public authority.

Destination

The last point in the itinerary and the last point at which the passenger is to deplane at the completion of the journey.

Discount fare

A reduced fare usually subject to one or more travel restrictions, the price of which is usually calculated as a percentage reduction from the normal full fare. Discounted fare includes various discount fares such as Charter Class, Seat Sales, Advance Purchase Excursion, Group.

Domestic

Refers to traffic beginning and terminating in the provinces and territories of Canada, and to traffic flown between city-pairs in Canada.

Economy fare

The basic fare with no restrictions charged by an airline, which is less expensive than first class but does not include the amenities (e.g. larger seats, complimentary bar) of the first class fare.

Enplaned

Traffic (passengers, mail and cargo) which embarks and takes off from an airport in Canada. It includes interline and intraline transfers, and traffic stopping over, as well as traffic originating at an airport.

Excess baggage

Baggage, which in terms of weight, number of pieces, or size exceeds the free baggage allowance stated in the air carrier's tariffs and for which a charge is levied.

Excursion fare

A fare for round-trip travel which is usually offered by a carrier to create a price incentive for travel on certain routes and/or at a certain time of the day, week or year. Requirements may include advance purchase, minimum/maximum length of stay, and stopover limitations; the fare may be restricted to a certain flight or to a limited number of seats on a particular flight.

Express

Property shipments within North America which are given priority over air freight. The rate charged includes door-to-door service on the ground as well.

First class fare

The transportation of a passenger or passengers for whom premium-quality services (e.g. larger seats, complimentary bar) are provided.

Five freedoms

Traffic rights relating to international air transportation that one country receives from the other when a bilateral air agreement is made. All five freedoms are not necessarily granted in every agreement. They are, in order: to fly across another's territory without landing; to land for non-traffic purposes; to put down passengers, mail and cargo taken on in the territory of the State whose nationality the aircraft possesses; to take on passengers, mail and cargo destined for the territory of the State whose nationality the aircraft possesses; and, to take on passengers, mail and cargo destined for the territory of any other contracting State and to put down passengers, mail and cargo coming from any such territory.

Fixed-wing aircraft

Aircraft having wings fixed to the airplane fuselage and outspread in flight- that is, non-rotating wings.

Flying club

A non-profit organization constituted of members that perform flying training and recreational flying.

Flying operation expenses

Expenses incurred directly in the in-flight operation of aircraft or in the holding of aircraft and aircraft personnel in readiness for assignment to an in-flight status. Landing fees are also included in this account.

Foreign air carriers

Airlines with headquarters outside Canada.

General administration expenses

This term includes expenses of a general corporate nature as well as those incurred in performing activities which contribute to more than a single operating function, such as general financial accounting activities, purchasing activities, representation at law, and other operational administrations not directly applicable to a particular function.

General aviation

General aviation, in this publication, describes all other civil aviation activities, like private flying, flying for fun, specialty flying, and flying by government-owned aircraft. It includes commercial air carriers whose activities are limited to Levels IV to VI (Level VII prior to 1988).

Glider

Any airplane without an engine.

Goods

This term includes all types of non-passenger traffic (i.e. freight, express, mail, and excess baggage). (see Cargo)

Goods tonne-kilometre

A goods tonne-kilometre represents the carriage of one tonne of goods over one kilometre. Tonne-kilometre figures are obtained by totalling the number of kilometres flown with each tonne of goods.

Government - civil

Aircraft owned by federal, provincial and municipal bodies as well as foreign states, but excluding those owned by crown corporations, boards and commissions.

Guadalajara Convention

The Guadalajara Convention adopted in 1961 in Guadalajara, Mexico, contained rules relating to international carriage by air performed by a person who is not a party to the Warsaw Convention for carriage.

Hague Protocol

The Hague Protocol modified the Warsaw Convention by increasing the liability limits. This Protocol was adopted in the Hague on September 28, 1955 and entered into force on August 1, 1963.

Helicopter

A heavier-than-air aircraft that derives lift from one or more revolving "wings", or "blades", engine-driven about an approximately vertical axis. A helicopter does not have conventional fixed wings, nor is it provided with a conventional propeller for forward thrust.

IATA – International Air Transport Association

The trade association of airlines engaged in international air transportation. Historically, its main function was the economic regulation of international air transportation; in particular, international scheduled rates and fares. Its decisions are subject to approval by the governments of the countries that would be affected by IATA air fares. Its headquarters are in Montréal, Quebec.

ICAN – International Convention for Air Navigation

The international organization of 1919 which was the forerunner of ICAO.

ICAO – International Civil Aviation Organization

A specialized agency of the United Nations responsible for developing a standardized system for matters such as air navigation, licensing, safety, and landing procedures. Its headquarters are in Montréal, Québec.

Interest expenses

Interest on all classes of debt including premiums, discounts and expenses on short-term obligations; amortization of premium discounts; and expenses on short-term and long-term obligations.

Interline transfer

Traffic interchanged at an airport between one airline and another.

International

Refers to traffic originating or terminating in Canada destined to or originated from foreign countries. International traffic is subdivided into Transborder (to or from a point in the United States) and other international (to or from points in other countries).

Intraline transfer

Traffic interchanged at an airport between one flight of an airline with another flight of the same airline.

Itinerant movement

At airports with control towers and/or flight service stations refers to a movement in which an aircraft proceeds to or arrives from another location; or where aircraft leaves the circuit but returns without landing at another airport.

Itinerary

All the points in the passenger's journey in the sequence shown on the ticket, beginning with the origin, followed by the routing and ending with the destination.

Jet engine

A turbine utilizing the energy from its internal gas stream to provide direct propulsion. A fan-jet engine or turbo-fan is a modified turbo-jet engine capable of producing much more thrust by expelling a greater volume or weight of cooler gas. This more efficient jet is the result of cold air being added by a turbine- driven, ducted fan, to the jet of hot gas produced by the engine.

Level definitions for statistical reporting

Prior to 1988, for purposes of statistical reporting, Canadian air carriers are classified into seven reporting levels. These levels were defined in the Air Carrier Regulations as follows:

Level I (prior to 1988)

Level I, comprising any air carrier that, in each of the two years immediately preceding the reporting year, – earned annual gross revenues of \$500 thousand or more from the operation of all its licensed commercial air services, – carried 500 thousand or more enplaned passengers, 100 thousand or more tonnes of enplaned goods or both the passengers and goods and, – was licensed to operate Classes 1,2,3,4,8,9-2,9-3, or 9-4 fixed wing commercial air services.

Level II (prior to 1988)

Level II comprising any air carrier not assigned to reporting Level I that, in each of the two years immediately preceding the reporting year – earned annual gross revenues of \$500 thousand or more from the operation of all its licensed commercial air services, – carried more than 50 thousand enplaned passengers, more than 10 thousand of enplaned goods or both the passengers and goods and – was licensed to operate Classes 1,2,3,4,8,9-2,9-3 or 9-4 fixed wing commercial air services.

Level III (prior to 1988)

Level III comprising any carrier not assigned to reporting Levels I,II,V,VI or VII that, in each of the two years preceding the reporting year earned annual gross revenues of \$500 thousand or more from the operation of all its licensed commercial air services or during any part of the reporting year, was licensed to operate Classes 1,2,8 or 9-2 fixed wing commercial air services.

Level IV (prior to 1988)

Level IV comprising any air carrier that, in either of the two years immediately preceding the reporting year earned annual gross revenues of less than \$500 thousand from the operation of all its licensed commercial air services.

Level V (prior to 1988)

Level V comprising any air carrier that, throughout the reporting year, was licensed to operate only Class 7 fixed wing commercial air services or only Class 7 fixed wing commercial air services and Class 6 commercial air services.

Level VI (prior to 1988)

Level VI comprising any air carrier that, throughout the reporting year, was licensed to operate only Class 6 commercial air services.

Level VII (prior to 1988)

Level VII comprising any air carrier that, throughout the reporting year, was licensed to operate only Classes 4,5,9-4 or 9-5 commercial air services restricted to serving the transportation requirements of a lodge operation.

Since 1988 the levels are defined by Statistics Canada and the National Transportation Agency as follows:

Level I (since 1988)

includes every Canadian air carrier not classified in report Level II-VI that, in each of the two calendar years immediately preceding the report year, transported at least 1,000,000 revenue passengers or at least 200 000 tonnes of revenue goods.

Level II (since 1988)

includes every Canadian air carrier not classified in report Level I or III-VI that, in each of the two calendar years immediately preceding the report year, transported at least 50,000 revenue passengers or more, but fewer than 1,000,000 revenue passengers, or 10 000 tonnes of revenue goods or more but less than 200 000 tonnes of revenue goods.

Level III (since 1988)

includes every Canadian air carrier not classified in report Level I, II or IV-VI that, in each of the two calendar years immediately preceding the report year, transported at least 5,000 revenue passengers or more, but fewer than 50,000 revenue passengers, or 1 000 tonnes of revenue goods or more but less than 10 000 tonnes of revenue goods.

Level IV (since 1988)

includes every Canadian air carrier not classified in report Level I-III, V or VI that, in each of the two calendar years immediately preceding the report year, realized annual gross revenues of \$250,000 or more for the air services for which the air carrier held a licence.

Level V (since 1988)

includes every Canadian air carrier not classified in report Level I-IV or VI that, in each of the two calendar years immediately preceding the report year, realized annual gross revenues of less than \$250,000 or more for the air services for which the air carrier held a licence.

Level VI (since 1988)

includes every Canadian air carrier that, in the report year, operated the air service for which the air carrier held a licence for the sole purpose of serving the needs of a lodge operation.

Local carrier

Any Canadian airline of Levels II, III and IV that operates classes 2,3,9-2 or 9-3 licenses.

Local movement

At airports with control towers and/or flight service stations, refers to a movement in which the aircraft remains in the circuit.

Maintenance expenses

Expenses, both direct and indirect, incurred in the repair and upkeep of property and equipment required to meet operating and safety standards.

Major airline

In this publication, refers to a Level I air carrier.

NTA – National Transportation Agency

The Federal Government body which was created by the 1987 National Transportation Act and is responsible for the regulation of air, rail, road, water and pipeline transportation.

Non-operating income and expense

Income and loss from commercial ventures not part of the air transport services of the accounting entity; other revenues and expenses attributable to financing or other activities that are extraneous to and not an integral part of air transportation or its incidental services; and special recurrent items of a non-periodic nature.

Open Sky concept

The concept of deregulation of commercial air services between two nations allowing all carriers access to any of the international city-pairs.

Operating expenses

Expenses incurred in the performance of air transportation. It includes direct aircraft operating expenses as well as ground and indirect operating expenses.

Operating ratio

The operating ratio is the proportion of total operating revenues absorbed by total operating expenses.

Operating revenues

Revenues from the performance of air transportation and related non-flying services. It includes: (1) transport revenue from all classes of traffic, and (2) non-transport revenue consisting of payments under the National Transportation Act where applicable, and the net amount of revenue less related expenses from services incidental to air transportation.

Operating revenue per tonne-kilometre

This ratio is calculated by dividing the operating revenues by the total tonne-kilometres flown.

Origin

The first air departure point in a passenger's itinerary. (The point where a passenger first boards a carrier at the beginning of the journey.)

Passenger

A person who pays a fare and receives air transportation is counted as one revenue passenger. Persons paying 25% or less of the normal applicable fares are not included.

Passenger-kilometre

A passenger-kilometre represents the carriage of one passenger for one kilometre. Passenger-kilometre figures are obtained by totalling the number of kilometres flown by each passenger.

Passenger Load Factor

A measure of passenger capacity utilization derived by expressing revenue passenger-kilometres as a percentage of available seat-kilometres.

Piston engine aircraft

An aircraft operated by an engine or engines in which pistons moving back and forth work on a crankshaft or other device to create rotational movement.

Power Plant

The source of propulsion. For example, piston engines, turbo-propellers, jet engines, and helicopters (including both piston and turboshaft-driven engines.)

Private aircraft

Aircraft used solely for private purposes, not for-hire and compensation. Owners include individuals, groups and business firms.

Private airport

An airport at which a pilot should obtain the operator's permission before using it.

Profit margin

Indicates the profit margin earned by revenue dollar. It is obtained by dividing net income by operating revenue.

Public airport

An airport that is open for use by any pilot.

RCFCA – Royal Canadian Flying Clubs Association

The Association was called Canadian Flying Clubs Association (CFCA) until the end of World War II.

Regional carrier

Any Canadian airline designated by Transport Canada as a "regional carrier" (Level I carriers excluding Air Canada, Canadian Pacific Air Lines and Wardair). The regional carriers were Pacific Western Airlines, Nordair, Québecair, and Eastern Provincial Airways, until the policy ended in August 1986.

Reregulation

Economic regulatory reform resulting in less regulation and a greater reliance on competition and market forces.

Return on assets

Measure of profitability calculated by dividing net income by total assets. It shows the efficiency with which total assets are used in business operation.

Return on investment

Measure of profitability calculated by dividing net income and interest expenses by total assets.

Rotary-wing aircraft

Helicopters and autogyros.

Scheduled service

Air transportation (transportation of persons, mail and cargo at a toll per unit) service performed under Classes 1,2,3,8,9-2 or 9-3 licenses as issued by the National Transportation Agency.

Southern and northern sectors

The dividing line separating the southern and northern domestic sectors is defined by the 50th parallel from the Atlantic Ocean to Ontario/Manitoba boundary, the diagonal joining the 50th parallel at the Ontario/Manitoba boundary to the 53rd parallel at the Manitoba-Saskatchewan boundary, the diagonal joining the 53rd parallel at the Manitoba-Saskatchewan boundary to the 55th parallel at the Saskatchewan/Alberta boundary and the 55th parallel from the Saskatchewan/Alberta boundary to the Pacific Ocean.

Specialty flying service

Consists of activities such as sightseeing, flight training, aerial photography, and survey, or other types of flying which do not involve the transport of passengers or goods from one place to another. The specialty flying services are performed under a Class 7 licence.

Tonne-kilometre

Represents the carriage of one tonne of goods or passengers for one kilometre. The number of tonne-kilometres is the sum of the kilometres flown with each tonne of goods or passengers.

Transport Canada (a.k.a. Department of Transport)

The Federal Government Department which provides and operates domestic airway facilities, a national air terminal system, and regulatory services required for aviation safety. (At the beginning of 1986, the Canadian Air Transportation Administration (CATA) was split into two groups: the Aviation Group and the Airports Authority Group.)

TSB – Transportation Safety Board

A body in the administration of civil aviation which was created by the 1984 Canadian Aviation Safety Act and is responsible to improve aviation safety in Canada.

Turbo-jet

Gas turbine-powered aircraft. Aircraft operated by jet engine or engines incorporating a turbine-driven air compressor to take in and compress the air for the combustion of fuel, the gases of combustion (or the heated air) being used both to rotate the turbine and to create a thrust-production jet.

Turbo-prop

Turbine-powered aircraft. Aircraft operated by gas turbine engines. The propeller shaft is connected to the turbine which operates both the air compressor and the propeller.

Warsaw Convention

The Convention for the Verification of Certain Rules Relating to the International Carriage by Air. The rules in the Convention provide liability for damage, death or injury to passengers, destruction, loss, or damage to baggage or goods, and loss resulting from delay. It also establishes the monetary limits for the above-described losses, damages and delays. This Convention was signed at Warsaw on October 12, 1929 and came into force on February 13, 1933.

Weight group

The classification of weight classes in groups for statistical purposes. The weight groups correspond to the following:

1. For fixed-wing aircraft, the maximum authorized take-off weight on wheels are:
Group A: less than 1 950 kg; Group B: 1 950 to 3 402 kg; Group C: 3 403 to 8 165 kg; Group D: 8 166 to 15 876 kg; Group E: 15 877 to 34 019 kg; Group F: 34 020 to 68 039 kg; Group G: 68 040 to 158 757 kg; Group H: greater than 158 757 kg.

2. For rotary-wing aircraft, the maximum authorized take-off weight on wheels are:
Group A: less than 2 000 kg; Group B: 2 000 to 3 402 kg; Group C: 3 403 to 8 165 kg; Group D: 8 166 to 15 876 kg.

World Area

The world areas are defined below:

1. United States (all areas under its sovereignty, jurisdiction or trusteeship).
2. Southern (composed of Bermuda, the Bahamas, the Caribbean Islands – except Puerto Rico and the United States Virgin Islands – Mexico, Central America and South America).
3. Europe (including Iceland, Greenland and the Azores).
4. Africa (including that part of Egypt located in Asia).
5. Asia (including part of Turkey located in Europe, as well as Sumatra, Java, Borneo, New Guinea, the Philippine Islands and other adjacent islands thereto).
6. Pacific (composed of Australia, New Zealand, Melanesia, Micronesia and Polynesia, except islands in the Pacific Ocean under United States administration).

Aviation in Canada: Historical and Statistical Perspectives on Civil Aviation

Aviation in Canada: Historical and Statistical perspectives on Civil Aviation presents both an analytical account of recent developments up to 1992 and an historical chronicle of 75 years of the air transport industry. **Special attention** has been given to *Aviation in Canada* which was produced as a commemorative issue to the 75th anniversary of Statistics Canada. It includes information on:

- commercial and private flying
- domestic and international passenger traffic
- fleet composition and its evolution
- the effects of regulation and deregulation
- air fares and who gets discounts, and more.

With over 100 photographs, maps, tables and graphs, this book presents an easy-to-read analysis on contemporary and historic changes in this dynamic industry. The growth and development of each aspect of aviation is explained, recounting the dramatic high points and explaining their effects on current events.

Aviation in Canada is a necessity for anyone interested in an up-to-date and thorough guide to the industry and its colourful past.

